

SITE HEALTH AND SAFETY PLAN (*HASP*)

Office: CHI
Site Name: Lusher Street Groundwater Contamination Site
Client: U.S. EPA
Work Location: Elkhart, Elkhart County, Indiana
WO#: 20405.012.008.0506.00

SITE HEALTH AND SAFETY PLAN (HASP)

Prepared by: Trenna Seilheimer

W.O. Number: 20405.012.008.0506.00

Date: 4/23/09

Project Identification

Office: CHI
 Site Name: Lusher Street Groundwater Contamination Site
 Client: U.S. EPA
 Work Location Address:

Site History: USEPA has requested that Weston investigate and identify potential PRPs responsible for groundwater Contamination in Elkhart, Indiana. As a result several facilities will be investigated to check for soil and groundwater VOC contamination. Potential contaminants of concern are expected to be VOCs.

Scope of Work: At each facility soil and groundwater samples will be collected using Geoprobe. Clear each drilling location for the presence of underground utilities through Indiana's one-call system (Indiana Underground Plant Protection). Advance approximately 108 soil borings at 20 different facilities to an estimated 25 feet below ground surface (bgs) utilizing a track-mounted Geoprobe® or equivalent. Soil samples will be collected from each boring location. Groundwater will also be sampled if conditions are suitable for retractable-screen sampling methods. Advance permanent temporary monitoring wells at 7 different facilities to an estimated 25 feet bgs utilizing a track-mounted Geoprobe® or equivalent. Manage all investigation-derived waste (IDW), including personal protective equipment (PPE), soil cuttings, and wastewater, generated from decontamination and well purging activities.

☐ Site visit only; site HASP not necessary. List personnel here and sign off below:

Regulatory Status:

Site regulatory status:

CERCLA/SARA **RCRA** **Other Federal Agency**

☒ U.S. EPA ☐ U.S. EPA ☐ DOE
☐ State ☐ State ☐ USACE
☐ NPL Site **NRC** ☐ Air Force
☒ OSHA ☐ 10 CFR 20 ☐ _____
 Hazard Communication (Req'd See Attachment D)
☒ 1910 ☐ 1926 ☐ State

Safety Officer Manual (Required to be On-Site)

Based on the Hazard Assessment and Regulatory Status, determine the Standard HASP(s) applicable to this project. Indicate below which Standard HASP will be used and append the appropriate pages of this form along with the Standard Plan.

☐ Stack Test ☐ _____
☐ Air Emissions ☐ _____
☐ Asbestos ☐ _____
☐ Industrial Hygiene ☐ _____
☐ _____ ☐ _____

Review and Approval Documentation:

Reviewed by:
 SO/DSM/CHS

Tonya Balla
 Name (Print)

Signature

Date: _____

Other

Name (Print)

Signature

Date: _____

Approved by:
 Project Manager

Om Patel
 Name (Print)

Signature

Date: _____

Hazard Assessment and Equipment Selection:

In accordance with WESTON's Personal Protective Equipment Program and 29 CFR 1910.132, at the site prior to personnel beginning work, the SHSC and/or the Site Manager have evaluated conditions and verified that the personal protective equipment selection outlined within this HASP is appropriate for the hazards known or expected to exist. (Refer to Safety Officer Manual Section 2, Personal Protection Program, for guidance.)

☒ **FSO**

☒ **Site Manager**

Trenna Seilheimer
 Name

Signature

Date: _____

☒ **Environmental Compliance Officer**

☒ **Dangerous Goods Shipping Coordinator**

Trenna Seilheimer
 Name

Signature

Date: _____

Project start date: 04/12/04

This site HASP **must** be

Amendment date(s)

By:

End date: (615) 200-9	reissued/reapproved for any activities conducted after: Date: 9-2009	1. 2. 3. 4. 5.	
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Vehicle Use Assessment and Selection

Driving is one of the most hazardous and frequent activities for WESTON Employees. The most appropriate type vehicle(s) authorized for use on this project is/are:

1. SUV
- 2.
- 3.
- 4.

The following Project Team Member's qualifications and experience in driving these types of vehicles was evaluated and found to be acceptable (indicate vehicle type(s) number next to employee name).

1. Trenna Seilheimer
2. (
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

The project site was evaluated and a **Traffic Control Plan** ☐ is required ☒ is not required.

If required, the **Traffic Control Plan** can be found in Attachment H.

TABLE OF CONTENTS

Section	Page
1. PERSONNEL ON SITE INFORMATION	1-1
1.1 WESTON REPRESENTATIVES.....	1-2
1.2 WESTON SUBCONTRACTORS	1-2
1.3 SITE PERSONNEL AND CERTIFICATION STATUS	1-3
1.3.1 Weston Employee Certification	1-3
1.3.2 Subcontractor's Health and Safety Program Evaluation	1-4
2. HEALTH AND SAFETY EVALUATION	2-1
2.1 HEALTH AND SAFETY EVALUATION.....	2-2
2.1.1 Task Hazard Assessment	2-2
2.1.2 Chemical Hazards of Concern	2-3
2.1.3 Biological Hazards of Concern.....	2-4
2.1.4 Radiation Hazards of Concern.....	2-5
2.1.5 Physical Hazards of Concern.....	2-6
3. TASK BY TASK ASSESMENT	3-1
3.1 TASK-BY-TASK RISK ASSESSMENT	3-2
3.1.1 Task 1 Description	3-2
3.1.2 Task 2 Description	3-4
3.1.3 Task 3 Description	3-5
3.1.4 Task 4 Description	3-6
3.2 PERSONNEL PROTECTION PLAN	3-7
3.3 DESCRIPTION OF LEVELS OF PROTECTION.....	3-8
4. MONITORING PROGRAM	4-1
4.1 SITE OR PROJECT HAZARD MONITORING PROGRAM.....	4-2
4.1.1 Air Monitoring Instruments	4-2
4.1.2 Air Monitoring Instruments Calibration Record.....	4-3
4.2 SITE AIR MONITORING PROGRAM	4-4
4.3 ACTION LEVELS.....	4-5
5. HOSPITAL INFORMATION	5-1
5.1 CONTINGENCIES	5-2
5.1.1 Emergency Contacts and Phone Numbers	5-2
5.1.2 Hospital Map	5-3
5.1.3 Response Plans.....	5-4
6. DECONTAMINATION PLAN	6-1
6.1 GENERAL DECONTAMINATION PLAN.....	6-2
6.2 LEVEL D DECONTAMINATION PLAN	6-3
6.3 LEVEL C DECONTAMINATION PLAN	6-4
6.4 LEVEL B DECONTAMINATION PLAN	6-5
7. TRAINING AND BRIEFING TOPICS/SIGN OFF SHEET	7-1
7.1 TRAINING AND BRIEFING TOPICS	7-2
7.2 HEALTH AND SAFETY PLAN APPROVAL/SIGNOFF FORM	7-3
SANITATION 29 CFR 1926 Subparts C, D. EM 385-1-1, Section 2	Error!
Bookmark not defined.	

ATTACHMENTS

ATTACHMENT A	Chemical Contaminants Data Sheets
ATTACHMENT B	Material Safety Data Sheets
ATTACHMENT C	Safety Procedures/Field Operating Procedures (FLD Ops)
ATTACHMENT D	Hazard Communication Program
ATTACHMENT E	Air Sampling Data Sheets
ATTACHMENT F	Incident Reporting
ATTACHMENT G	AHA Checklist and Environmental Compliance
ATTACHMENT H	Traffic Control Plan
ATTACHMENT I	Audit Forms
ATTACHMENT J	Environmental Health & Safety Inspection Checklist
ATTACHMENT K	Environmental Protection and Sustainability Program Impact Checklist

1. PERSONNEL ON SITE INFORMATION

1.1 WESTON REPRESENTATIVES

Organization/Branch	Name/Title	Address	Telephone
VHI	Om Patel (PM)	750 E Bunker Court Suite 500 Vernon Hills, IL 60061	847.918.4000
CHI	Trenna Seilheimer (Associate Geoscientist)	20 North Wacker Drive Suite 1210 Chicago, IL 60606	312.424.3300
VHI	Michelle Mullen	750 E Bunker Court Suite 500 Vernon Hills, IL 60061	847.918.4000

Roles and Responsibilities:

O. Patel- Project Manager and the Task Manager for this job. T. Seilheimer- FSO and FTL. FSO will assure that the underground utilities are marked prior to beginning boring activities (contractors will be responsible for assuring that the underground utilities are marked). M. Mullen- Alternate FTL

1.2 WESTON SUBCONTRACTORS

Organization/Branch	Name/Title	Address	Telephone
Cabeno Environmental Services	Name: John Noyes Title:	Street: 16714 Cherry Creek Ct City: Joliet State, Zip: IL 60433	(815) 774-3747
	Name: Title:	Street: City: State, Zip:	
	Name: Title:	Street: City: State, Zip:	

Roles and Responsibilities:

SITE-SPECIFIC HEALTH AND SAFETY PERSONNEL

The Site Field Safety Officer (FSO) for activities to be conducted at this site is: Trenna Seilheimer

The FSO has total responsibility for ensuring that the provisions of this Site HASP are adequate and implemented in the field.

Changing field conditions may require decisions to be made concerning adequate protection programs. Therefore, the personnel assigned as FSOs are experienced and meet the additional training requirements specified by OSHA in 29 CFR 1910.120.

Qualifications:

(40

Designated alternates include: (

1.3 SITE PERSONNEL AND CERTIFICATION STATUS

1.3.1 Weston Employee Certification

Name: Trenna Seilheimer Title: Associate Geoscientist Task(s): All Certification Level or Description: <input checked="" type="checkbox"/> Medical Current <input checked="" type="checkbox"/> Training Current <input type="checkbox"/> Fit Test Current (Qual.) <input checked="" type="checkbox"/> Fit Test Current (Quant.)	Name: Michelle Mullen Title: Task(s): All Certification Level or Description: <input checked="" type="checkbox"/> Medical Current <input checked="" type="checkbox"/> Training Current <input type="checkbox"/> Fit Test Current (Qual.) <input checked="" type="checkbox"/> Fit Test Current (Quant.)
Name: Title: Task(s): Certification Level or Description: <input type="checkbox"/> Medical Current <input type="checkbox"/> Training Current <input type="checkbox"/> Fit Test Current (Qual.) <input type="checkbox"/> Fit Test Current (Quant.)	Name: Title: Task(s): Certification Level or Description: <input type="checkbox"/> Medical Current <input type="checkbox"/> Training Current <input type="checkbox"/> Fit Test Current (Qual.) <input type="checkbox"/> Fit Test Current (Quant.)
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TRAINING CURRENT - Training: All personnel, including visitors, entering the exclusion or contamination reduction zones must have certifications of completion of training in accordance with OSHA 29 CFR 1910, 29 CFR 1926, or 29 CFR 1910.120.

FIT TEST CURRENT - Respirator Fit Testing: All persons, including visitors, entering any area requiring the use or potential use of any negative pressure respirator must have had, as a minimum, a qualitative fit test, administered in accordance with OSHA 29 CFR 1910.134 or ANSI, within the last 12 months. If site conditions require the use of a full-face, negative-pressure, air-purifying respirator for protection from asbestos or lead, employees must have had a qualitative fit test, administered according to OSHA 29 CFR 1910.1001 or 1025/1926, within the last 6 months.

MEDICAL CURRENT - Medical Monitoring Requirements: All personnel, including visitors, entering the exclusion or contamination reduction zones must be certified as medically fit to work and to wear a respirator, if appropriate, in accordance with 29 CFR 1910, 29 CFR 1926/1910, or 29 CFR 1910.120.

The Site Field Safety Officer is responsible for verifying all certifications and fit tests.

SITE PERSONNEL AND CERTIFICATION STATUS

1.3.2 Subcontractor's Health and Safety Program Evaluation

Name of Subcontractor: Cabeno Environmental Services

Address: 16714 Cherry Creek Court, Joliet, Illinois 60433

Activities To Be Conducted by Subcontractor: All

Evaluation Criteria

Medical program meets OSHA/WESTON criteria

☒ Acceptable
☐ Unacceptable

Comments:

Personal protective equipment available

☒ Acceptable
☐ Unacceptable

Comments:

On-site monitoring equipment available, calibrated, and operated properly

☒ Acceptable
☐ Unacceptable

Comments:

Safe working procedures clearly specified

☒ Acceptable
☐ Unacceptable

Comments:

Training meets OSHA/WESTON criteria

☒ Acceptable
☐ Unacceptable

Comments:

Emergency procedures

☒ Acceptable
☐ Unacceptable

Comments:

Decontamination procedures

☒ Acceptable
☐ Unacceptable

Comments:

General health and safety program evaluation

☒ Acceptable
☐ Unacceptable

Comments:

Additional comments:

- ☒ Subcontractor has agreed to and will conform with the WESTON HASP for this project.
- ☐ Subcontractor will work under his own HASP, which has been accepted by project PM.

Evaluation Conducted by: Certifications for all subcontractors personnel will be added to the HASP prior to beginning work.

Date: 04/22/09

Subcontractor

Name: Chris Miller

Title: Field Tech

Task(s): All

Certification Level or Description:

☒ Medical Current ☒ Training Current
☒ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)

Name: Joshua Tirado

Title: Field Tech

Task(s): All

Certification Level or Description:

☒ Medical Current ☒ Training Current
☒ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)

Name: Scott Faber

Title: Operations Manager

Task(s): All

Certification Level or Description:

☒ Medical Current ☒ Training Current
☒ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)

Name: Adam Witt

Title: Field Tech

Task(s): All

Certification Level or Description:

☒ Medical Current ☒ Training Current
☒ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)

2. HEALTH AND SAFETY EVALUATION

2.1 HEALTH AND SAFETY EVALUATION

2.1.1 Task Hazard Assessment

Background Review: ☒ Complete ☐ Partial If partial why?

Activities Covered Under This Plan:

No.	Task/Subtask	Description	Schedule
1	Soil Boring	Soil borings/temp wells advanced to specific depths. Soil samples collected by a Geoprobe. Groundwater samples collected if conditions are suitable for retractable-screen sampling methods (boring locations). Bladder pump/bailer to collect groundwater samples from temp wells.	3-4 weeks

Types of Hazards:

Numbers refer to one of the following hazard evaluation forms. Complete hazard evaluation forms for each appropriate hazard class.

Physiochemical 1

- ☒ Flammable
- ☐ Explosive
- ☐ Corrosive
- ☐ Reactive
- ☐ O₂ Rich
- ☐ O₂ Deficient

Chemically Toxic 1

- ☒ Inhalation ☒ Carcinogen
- ☒ Ingestion ☐ Mutagen
- ☒ Contact ☐ Teratogen
- ☒ Absorption
- ☐ OSHA 1910.1000 Substance (Air Contaminants)
- ☒ OSHA Specific Hazard Substance Standard (Refer to following page for listing)

Radiation 3

- Ionizing:
 - ☐ Internal exposure
 - ☐ External exposure
- Non-ionizing:
 - ☒ UV ☐ IR
 - ☐ RF ☐ MicroW
 - ☐ Laser

Biological 2

- ☐ Etiological Agent
- ☒ Other (plant, insect, animal)

Physical Hazards 4

- ☐ Construction Activities

Source/Location of Contaminants and Hazardous Substances:

Directly Related to Tasks

- ☐ Air
- ☐ Other Surface
- ☒ Groundwater
- ☒ Soil
- ☐ Surface Water
- ☐ Sanitary Wastewater
- ☐ Process Wastewater
- ☐ Other _____

Indirectly Related to Tasks — Nearby Process(es) That Could Affect Team Members:

- ☐ Client Facility/WESTON Work Location
- ☐ Nearby Non-Client Facility
- Describe:
- ☐ Have activities (task[s]) been coordinated with facility?

HEALTH AND SAFETY EVALUATION

2.1.2 Chemical Hazards of Concern

☐ N/A

Chemical Contaminants of Concern

Provide the data requested for chemical contaminants on HASP Form 25 or attach data sheets from an acceptable source such as NIOSH pocket guide, condensed chemical dictionary, ACGIH TLV booklet, etc. List chemicals and concentrations below and locate data sheets in Attachment B of this HASP.

☐ N/A

Identify hazardous materials used or on-site and attach Material Safety Data Sheets (MSDSs) for all reagent type chemicals, solutions, or other identified materials that in normal use in performing tasks related to this project could produce hazardous substances. Ensure that all subcontractors and other parties working nearby are informed of the presence of these chemicals and the location of the MSDSs. Obtain from subcontractors and other parties, lists of the hazardous materials they use or have on-site and identify location of the MSDSs here. List chemicals and quantities below and locate MSDSs in Attachment B of this HASP.

Chemical Name	Concentration ()	Chemical Name	Quantity
PCE	110 ppb	Alconox	small amounts
TCE	19 ppb	Nitric Acid (preservative)	small amounts
TCA	1 ppb	Isobutylene Cal Gas	100ppm
		Hydrochloric Acid (preservative)	small amounts

OSHA-SPECIFIC HAZARDOUS SUBSTANCES

The following substances may require specific medical, training, or monitoring based on concentration or evaluation of risk. See the appropriate citation listed under 29 CFR 1910 or 1926 for additional information.

- | | | | |
|---|--|---|--|
| <input type="checkbox"/> 1910.1001 Asbestos | <input type="checkbox"/> 1910.1002 Coal tar pitch volatiles | <input type="checkbox"/> 1910.1003 4-Nitrobiphenyl, etc. | <input type="checkbox"/> 1910.1004 alpha-Naphthylamine |
| <input type="checkbox"/> 1910.1005 [Reserved] | <input type="checkbox"/> 1910.1006 Methyl chloromethyl ether | <input type="checkbox"/> 1910.1007 3,3'-Dichlorobenzidine (and its salts) | <input type="checkbox"/> 1910.1008 bis-Chloromethyl ether |
| <input type="checkbox"/> 1910.1009 beta-Naphthylamine | <input type="checkbox"/> 1910.1010 Benzidine | <input type="checkbox"/> 1910.1011 4-Aminodiphenyl | <input type="checkbox"/> 1910.1012 Ethyleneimine |
| <input type="checkbox"/> 1910.1013 beta-Propiolactone | <input type="checkbox"/> 1910.1014 2-Acetylaminofluorene | <input type="checkbox"/> 1910.1015 4-Dimethylaminoazobenzene | <input type="checkbox"/> 1910.1016 N-Nitrosodimethylamine |
| <input type="checkbox"/> 1910.1017 Vinyl chloride | <input type="checkbox"/> 1910.1018 Inorganic arsenic | <input type="checkbox"/> 1910.1025 Lead (Att. FLD# 46) | <input type="checkbox"/> 1910.1027 Cadmium |
| <input type="checkbox"/> 1910.1028 Benzene | <input type="checkbox"/> 1910.1029 Coke oven emissions | <input type="checkbox"/> 1910.1043 Cotton dust | <input type="checkbox"/> 1910.1044 1,2-Dibromo-3-chloropropane |
| <input type="checkbox"/> 1910.1045 Acrylonitrile | <input type="checkbox"/> 1910.1047 Ethylene oxide | <input type="checkbox"/> 1910.1048 Formaldehyde | <input type="checkbox"/> 1910.1050 Methylenedianiline |
| <input type="checkbox"/> 1910.1051 1,3 Butadiene | <input type="checkbox"/> 1910.1052 Methylene chloride | | |

HEALTH AND SAFETY EVALUATION

2.1.3 Biological Hazards of Concern

☒ **Poisonous Plants** (FLD 43)

Location/Task No(s)

Source: ☐ Known ☒ Suspect

Route of Exposure: ☐ Inhalation ☐ Ingestion
☒ Contact ☐ Direct Penetration

Team Member(s) Allergic: ☐ Yes ☒ No

Immunization required: ☐ Yes ☒ No

☒ **Insects** (FLD 43)

Location/Task No(s)

Source: ☐ Known ☒ Suspect

Route of Exposure: ☐ Inhalation ☐ Ingestion
☐ Contact ☒ Direct Penetration

Team Member(s) Allergic: ☐ Yes ☒ No

Immunization required: ☐ Yes ☒ No

☒ **Snakes, Reptiles** (FLD 43)

Location/Task No(s)

Source: ☐ Known ☒ Suspect

Route of Exposure: ☐ Inhalation ☐ Ingestion
☐ Contact ☒ Direct Penetration

Team Member(s) Allergic: ☐ Yes ☒ No

Immunization required: ☐ Yes ☒ No

☒ **Animals** (FLD 43)

Location/Task No(s)

Source: ☐ Known ☒ Suspect

Route of Exposure: ☐ Inhalation ☐ Ingestion
☐ Contact ☒ Direct Penetration

Team Member(s) Allergic: ☐ Yes ☒ No

Immunization required: ☐ Yes ☒ No

FLD 43 — WESTON Biohazard Field Operating Procedures: Att. OP ☐

☐ **Sewage**

Location/Task No(s):

Source: ☐ Known ☐ Suspect

Route of Exposure: ☐ Inhalation ☐ Ingestion
☐ Contact ☐ Direct Penetration

Team Member(s) Allergic: ☐ Yes ☐ No

Immunization required: ☐ Yes ☐ No

Tetanus Vaccination within Past 10 yrs: ☐ Yes ☐ No

☐ **Etiologic Agents (List)**

Location/Task No(s):

Source: ☐ Known ☐ Suspect

Route of Exposure: ☐ Inhalation ☐ Ingestion
☐ Contact ☐ Direct Penetration

Team Member(s) Allergic: ☐ Yes ☐ No

Immunization required: ☐ Yes ☐ No

FLD 44 — WESTON Bloodborne Pathogens Exposure Control Plan – First Aid Procedures: Att. OP ☒

FLD 45 — WESTON Bloodborne Pathogens Exposure Control Plan – Working with Infectious Waste: Att. OP ☐

HEALTH AND SAFETY EVALUATION								
2.1.4 Radiation Hazards of Concern								
NONIONIZING RADIATION								
Task No.	Type of Nonionizing Radiation	Source On-Site	TLV/PEL	Wavelength Range	Control Measures	Monitoring Instrument		
All	Ultraviolet	Solar			Appropriate clothing/sunscreen	None		
	Infrared	N/A						
	Radio Frequency	N/A						
	Microwave	N/A						
	Laser	N/A						
IONIZING RADIATION								
Task No.	Radionuclide	Major Radiations	Radioactive Half-Life (Years)	DAC (μCii/mL)			Surface Contamination Limit	Monitoring Instrument
				D	W	Y		

HEALTH AND SAFETY EVALUATION

2.1.5 Physical Hazards of Concern

Physical Hazard Condition	Physical Hazard	Attach OP	WESTON OP Titles
Loud noise	Hearing loss/disruption of communication	<input checked="" type="checkbox"/>	Section 7.0 - ECH&S Program Manual Occupational Noise & HC Program
Inclement weather	Rain/humidity/cold/ice/snow/lightning	<input checked="" type="checkbox"/>	FLD02 - Inclement Weather
Steam heat stress	Burns/displaced oxygen/wet working surfaces	<input type="checkbox"/>	FLD03 - Hot Process - Steam
Heat stress	Burns/hot surfaces/low pressure steam	<input type="checkbox"/>	FLD04 - Hot Process - LT3
Ambient heat stress	Heat rash/cramps/exhaustion/heat stroke	<input type="checkbox"/>	FLD05 - Heat Stress Prevention/Monitoring
Cold stress	Hypothermia/frostbite	<input type="checkbox"/>	FLD06 - Cold Stress
Cold/wet	Trench/paddy/immersion foot/edema	<input checked="" type="checkbox"/>	FLD02 - Inclement Weather
Confined spaces	Falls/burns/drowning/engulfment/electrocution	<input type="checkbox"/>	FLD08 - Confined Space Entry
Industrial Trucks	Fork Lift Truck Safety	<input type="checkbox"/>	FLD09 - Powered Industrial Trucks
Improper lifting	Back strain/abdomen/arm/leg muscle/joint injury	<input checked="" type="checkbox"/>	FLD10 - Manual Lifting/Handling Heavy Objects
Uneven surfaces	Vehicle accidents/slips/trips/falls	<input checked="" type="checkbox"/>	FLD11 - Rough Terrain
Poor housekeeping	Slips/trips/falls/punctures/cuts/fires	<input checked="" type="checkbox"/>	FLD12 - Housekeeping
Structural integrity	Crushing/overhead hazards/compromised floors	<input type="checkbox"/>	FLD13 - Structural Integrity
Improper cylinder. handling	Mechanical injury/fire/explosion/suffocation	<input type="checkbox"/>	FLD16 - Pressure Systems - Compressed Gases
Water hazards	Poor visibility/entanglement/drowning/cold stress	<input type="checkbox"/>	FLD17 - Diving
Water hazards	Drowning/heat/cold stress/hypothermia/falls	<input type="checkbox"/>	FLD18 - Operation and Use of Boats
Water hazards	Drowning/frostbite/hypothermia/falls/electrocution	<input type="checkbox"/>	FLD19 - Working Over Water
Vehicle hazards	Struck by vehicle/collision	<input checked="" type="checkbox"/>	FLD20 - Traffic
Explosions	Explosion/fire/thermal burns	<input type="checkbox"/>	FLD21 - Explosives
Moving mechanical parts	Crushing/pinch points/overhead hazards/electrocution	<input type="checkbox"/>	FLD22 - Earth Moving Equipment
Moving mech. parts	Overhead hazards/electrocution	<input checked="" type="checkbox"/>	FLD23 - Cranes, Rigging, and Slings
Working at elevation	Overhead hazards/falls/electrocution	<input type="checkbox"/>	FLD24 - Aerial Lifts/Man lifts
Working at elevation	Overhead hazards/falls/electrocution	<input type="checkbox"/>	FLD25 - Working at Elevation
Working at elevation	Overhead hazards/falls/electrocution/slips	<input type="checkbox"/>	FLD26 - Ladders
Working at elevation	Slips/trips/falls/overhead hazards	<input type="checkbox"/>	FLD27 - Scaffolding
Trench cave-in	Crushing/falling/overhead hazards/suffocation	<input type="checkbox"/>	FLD28 - Excavating/Trenching
Physiochemical	Explosions/fires from oxidizing, flam./corr. material	<input checked="" type="checkbox"/>	FLD30 - Hazardous Materials Use/Storage
Physiochemical	Fire and explosion	<input type="checkbox"/>	FLD31 - Fire Prevention/Response Plan Required
Physiochemical	Fire	<input checked="" type="checkbox"/>	FLD32 - Fire Extinguishers Required
Structural integrity	Overhead/electrocution/slips/trips/falls/fire	<input type="checkbox"/>	FLD33 - Demolition
Electrical	Electrocution/shock/thermal burns	<input checked="" type="checkbox"/>	FLD34 - Utilities
Electrical	Electrocution/shock/thermal burns	<input type="checkbox"/>	FLD35 - Electrical Safety
Burns/fires	Heat stress/fires/burns	<input type="checkbox"/>	FLD36 - Welding/Cutting/Brazing/Radiography
Impact/thermal	Thermal burns/high pressure impaction/heat stress	<input checked="" type="checkbox"/>	FLD37 - Pressure Washers/Sand Blasting
Impaction/electrical	Smashing body parts/pinching/cuts/electrocution	<input checked="" type="checkbox"/>	FLD38 - Hand and Power Tools
Poor visibility	Slips/trips/falls	<input checked="" type="checkbox"/>	FLD39 - Illumination
Fire/explosion	Burns/impaction	<input type="checkbox"/>	FLD40 - Storage Tank Removal/Decommissioning
Communications	Disruption of communications	<input checked="" type="checkbox"/>	FLD41 - Std. Hand/Emergency Signals
Energy/release	Unexpected release of energy	<input type="checkbox"/>	FLD42 - Lockout/Tag-out
Biological Hazards	Biological Hazards at site	<input type="checkbox"/>	FLD43 - Biological Hazards
Biological Hazards/BBP	Biological Hazards/BBP at site/First Aid Providers	<input checked="" type="checkbox"/>	FLD44 - Biological Hazards - Bloodborne Pathogens Exposure Control Plan - First Aid Providers
Infectious Waste	Infectious Waste at site/BBP/ at site/Infectious Waste	<input type="checkbox"/>	FLD45 - Biological Hazards - Bloodborne Pathogens Exposure Control Plan - Work With Infectious Waste
Lead Contaminated sites	Lead poisoning	<input type="checkbox"/>	FLD46 - Control of Exposure to Lead
Puncture/cuts	Cuts/ dismemberment/gouges	<input type="checkbox"/>	FLD47 - Clearing, Grubbing and Logging Operations

2.1.5 Physical Hazards of Concern (Continued)

Physical Hazard Condition	Physical Hazard	Attach OP	WESTON OP Titles
Not applicable	Not applicable	<input type="checkbox"/>	FLD48 – Federal, State, Local Regulatory Agency Inspections
Not applicable	Exposure to hazardous materials/waste	<input type="checkbox"/>	FLD49 – Safe Storage of Samples
Cadmium	Exposure Control	<input type="checkbox"/>	FLD50 – Cadmium Exposure Control Plan
Process Safety Procedure	Safety Procedure	<input type="checkbox"/>	FLD51 – Process Safety Procedure
Asbestos	Asbestos Exposure	<input type="checkbox"/>	FLD52 – Asbestos Exposure Control Plan
Hexavalent Chromium	Exposure Control Plan	<input type="checkbox"/>	FLD53 – Hexavalent Chromium Exposure Control Plan
Benzene	Exposure Control Plan	<input type="checkbox"/>	FLD54 - Benzene Exposure Control Plan
Hydrofluoric acid	Working with HF	<input type="checkbox"/>	FLD55 – Working with Hydrofluoric Acid
Moving drill rig parts	Crushing/pinch points/overhead hazards/electrocution	<input checked="" type="checkbox"/>	FLD56 – Drilling Safety
Vehicles/driving	Accidents/fatigue/cell phone use	<input checked="" type="checkbox"/>	FLD 57 – Motor Vehicle Safety
Improper material handling	Back injury/crushing from load shifts/equipment/tools	<input checked="" type="checkbox"/>	FLD 58 – Drum Handling Operations
COC decontamination	COCs/slip,trip, and falls/waste generation/environmental compliance/PPE	<input checked="" type="checkbox"/>	FLD59 - Decontamination
Drilling hazards	Electrocution/overhead hazards/pinch points	<input checked="" type="checkbox"/>	Environmental Remediation Drilling Safety Guideline - 2005
Fatigue	Long work hours	<input checked="" type="checkbox"/>	FLD60 – Employee Duty Schedule
Benzene/Gasoline	Benzene exposure	<input type="checkbox"/>	FLD61 – Gasoline Contaminant Exposure

3. TASK BY TASK ASSESMENT

3.1 TASK-BY-TASK RISK ASSESSMENT

3.1.1 Task 1 Description

TASK 1: Soil borings and temporary monitoring wells will be advanced to specific depths. Soil samples will be collected by a Geoprobe. Groundwater samples will also be collected if conditions are suitable for retractable-screen sampling methods (boring locations). A bladder pump or bailer will be used to collect groundwater samples from temporary monitoring wells.

EQUIPMENT REQUIRED/USED

Geoprobe	YSI	MultiRae	Sample Containers
Bladder pump/bailers			Level D PPE

POTENTIAL HAZARDS/RISKS

Chemical

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L

What justifies risk level?

Potential contaminants of concern are expected to be VOCs. Personnel will work upwind when possible. Personnel will avoid splash hazards when groundwater sampling.

Physical

☒ Hazard Present Risk Level: ☐ H ☒ M ☐ L

What justifies risk level?

Hazards with Geoprobe - adherence to SOPs; working around moving parts of rig/hand tools; when operating and particularly while pulling the probe or when the probe encounters different consistency soils or the Geoprobe is used through asphalt or concrete, has both hydraulic and kinetic (gravity) stored hazardous energy; all appropriate guards must be in place; coupling between the rig and probe must be heavy duty; only qualified operators will be near the rig when probes are being pushed; non-operators stay away, at least 15 feet, from the rear of the rig during operation; pinch hazard between the probe and the drive head; appropriate precautions, primarily awareness, guarding, if possible, and training are essential to prevent pinching. Weather related hazards/concerns - adherence to SOPs will minimize the risk; take frequent warm-up breaks if cold/windy weather. Overhead/Underground utilities - proper areas marked prior to beginning borings; rechecked with on-site personnel; assure information/utilities marked; minimum two methods utilized to confirm the location of utilities; drilling locations will be cleared by JULIE/private utility locator. Illumination - all work scheduled to be conducted in daylight hours; however, proper illumination will be adhered to if access is denied during the day time.

Biological

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L

What justifies risk level?

Insects, plants, and animals may be present. General awareness/avoidance and required PPE should address the hazards. If allergies are a factor, be aware of the surroundings and the plant life. First aid kit with ivy block will be onsite during all field operations.

RADIOLOGICAL

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L

What justifies risk level?

None anticipated except for solar radiation. Personnel will wear proper PPE and sunscreen as necessary to minimum exposure.

LEVELS OF PROTECTION/JUSTIFICATION

Level D

Cones and reflective safety vests will be used since drilling activities are being conducted at active commercial properties with parking lot and some truck traffic.

SAFETY PROCEDURES REQUIRED AND/OR FIELD OPS UTILIZED

All work will be performed in accordance with the provisions of this HASP, OSHA guidelines, and WESTON Standard Operating Procedures.

3.1 TASK-BY-TASK RISK ASSESSMENT	
3.1.2 Task 2 Description	
TASK 2: NA	
EQUIPMENT REQUIRED/USED	
POTENTIAL HAZARDS/RISKS	
Chemical	
<input type="checkbox"/> Hazard Present What justifies risk level?	Risk Level: <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L
Physical	
<input type="checkbox"/> Hazard Present What justifies risk level?	Risk Level: <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L
Biological	
<input type="checkbox"/> Hazard Present What justifies risk level?	Risk Level: <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L
RADIOLOGICAL	
<input type="checkbox"/> Hazard Present What justifies risk level?	Risk Level: <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L
LEVELS OF PROTECTION/JUSTIFICATION	
SAFETY PROCEDURES REQUIRED AND/OR FIELD OPS UTILIZED	
All work will be performed in accordance with the provisions of this HASP, OSHA guidelines, and WESTON Standard Operating Procedures.	

3.1 TASK-BY-TASK RISK ASSESSMENT	
3.1.3 Task 3 Description	
TASK 3: NA	
EQUIPMENT REQUIRED/USED	
POTENTIAL HAZARDS/RISKS	
Chemical	
<input type="checkbox"/> Hazard Present What justifies risk level?	Risk Level: <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L
Physical	
<input type="checkbox"/> Hazard Present What justifies risk level?	Risk Level: <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L
Biological	
<input type="checkbox"/> Hazard Present What justifies risk level?	Risk Level: <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L
RADIOLOGICAL	
<input type="checkbox"/> Hazard Present What justifies risk level?	Risk Level: <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L
LEVELS OF PROTECTION/JUSTIFICATION	
SAFETY PROCEDURES REQUIRED AND/OR FIELD OPS UTILIZED	
All work will be performed in accordance with the provisions of this HASP, OSHA guidelines, and WESTON Standard Operating Procedures.	

3.1 TASK-BY-TASK RISK ASSESSMENT	
3.1.4 Task 4 Description	
TASK __: NA	
EQUIPMENT REQUIRED/USED	
POTENTIAL HAZARDS/RISKS	
Chemical	
<input type="checkbox"/> Hazard Present What justifies risk level?	Risk Level: <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L
Physical	
<input type="checkbox"/> Hazard Present What justifies risk level?	Risk Level: <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L
Biological	
<input type="checkbox"/> Hazard Present What justifies risk level?	Risk Level: <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L
RADIOLOGICAL	
<input type="checkbox"/> Hazard Present What justifies risk level?	Risk Level: <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L
LEVELS OF PROTECTION/JUSTIFICATION	
SAFETY PROCEDURES REQUIRED AND/OR FIELD OPS UTILIZED	
All work will be performed in accordance with the provisions of this HASP, OSHA guidelines, and WESTON Standard Operating Procedures.	

3.2 PERSONNEL PROTECTION PLAN

Engineering Controls

Describe Engineering Controls used as part of Personnel Protection Plan:

Task(s)

- 1 Buddy system (Weston will have 2 personnel on-site)
- 1 Using cones and orange safety vests.
- 1 Be aware of the surroundings and traffic.

Administrative Controls

Describe Administrative Controls used as part of Personnel Protection Plan:

Task(s)

- 1 Distance will be maintained from drilling equipment whenever possible
- 1 Follow the safety regulations for the use of the Geoprobe as developed by the manufacturer of the rig and the contractor/subcontractor's safety group
- 1 Inspection of the drill rig prior to initiation of work
- 1 Training for use of equipment and work around hazardous materials

Personal Protective Equipment

Action Levels for Changing Levels of Protection. Refer to HASP Form 13, Site Air Monitoring Program—Action Levels. Define Action Levels for up or down grade for each task:

Task(s)

- 1 Drilling, soil, and groundwater sampling = Level D PPE
- 1 Reflective safety vests may be worn in areas of parking lots

Description of Levels of Protection

Level D

Task(s): All

- ☒ Head hard hat
- ☒ Eye and Face safety glasses
- ☒ Hearing ear plugs
- ☐ Arms and Legs Only
- ☐ Appropriate Work Uniform
- ☒ Hand – Gloves nitriles
- ☒ Foot - Safety Boots steel toe boots
- ☐ Fall Protection
- ☐ Flotation
- ☒ Other safety vest

Level D Modified

Task(s):

- ☐ Head
- ☐ Eye and Face
- ☐ Hearing
- ☐ Arms and Legs Only
- ☐ Whole Body
- ☐ Apron
- ☐ Hand - Gloves
- ☐ Gloves
- ☐ Gloves
- ☐ Foot - Safety Boots
- ☐ Over Boots

3.3 DESCRIPTION OF LEVELS OF PROTECTION

Level C	Level B
Task(s): <input type="checkbox"/> Head <input type="checkbox"/> Eye and Face <input type="checkbox"/> Hearing <input type="checkbox"/> Arms and Legs Only <input type="checkbox"/> Whole Body <input type="checkbox"/> Apron <input type="checkbox"/> Hand – Gloves <input type="checkbox"/> Gloves <input type="checkbox"/> Gloves <input type="checkbox"/> Foot - Safety Boots <input type="checkbox"/> Outer Boots <input type="checkbox"/> Boots (Other) <input type="checkbox"/> Half Face <input type="checkbox"/> Cart./Canister <input type="checkbox"/> Full Face <input type="checkbox"/> Cart./Canister <input type="checkbox"/> PAPR <input type="checkbox"/> Cart./Canister <input type="checkbox"/> Type C <input type="checkbox"/> Fall Protection <input type="checkbox"/> Flotation <input type="checkbox"/> Other	Task(s): <input type="checkbox"/> Head <input type="checkbox"/> Eye and Face <input type="checkbox"/> Hearing <input type="checkbox"/> Arms and Legs Only <input type="checkbox"/> Whole Body <input type="checkbox"/> Apron <input type="checkbox"/> Hand - Gloves <input type="checkbox"/> Gloves <input type="checkbox"/> Gloves <input type="checkbox"/> Foot - Safety Boots <input type="checkbox"/> Outer Boots <input type="checkbox"/> Boots (Other) <input type="checkbox"/> SAR - Airline <input type="checkbox"/> SCBA <input type="checkbox"/> Comb. Airline/SCBA <input type="checkbox"/> Cascade System <input type="checkbox"/> Compressor <input type="checkbox"/> Fall Protection <input type="checkbox"/> Flotation <input type="checkbox"/> Other

4. MONITORING PROGRAM

4.1 SITE OR PROJECT HAZARD MONITORING PROGRAM

4.1.1 Air Monitoring Instruments

Instrument Selection and Initial Check Record

Reporting Format: ☒ Field Notebook ☐ Field Data Sheets* ☐ Air Monitoring Log ☐ Trip Report ☐ Other

Instrument	Task No.(s)	Number Required	Number Received	Checked Upon Receipt	Comment	Initials
<input type="checkbox"/> CGI				<input type="checkbox"/>		
<input type="checkbox"/> O ₂				<input type="checkbox"/>		
<input type="checkbox"/> CGI/O ₂				<input type="checkbox"/>		
<input checked="" type="checkbox"/> CGI/O ₂ /tox-PPM, H ₂ S, H ₂ S/CO (MultiRae)				<input type="checkbox"/>		
<input type="checkbox"/> RAD				<input type="checkbox"/>		
<input type="checkbox"/> GM (Pancake)				<input type="checkbox"/>		
<input type="checkbox"/> NaI (Micro R)				<input type="checkbox"/>		
<input type="checkbox"/> ZnS (Alpha Scintillator)				<input type="checkbox"/>		
<input type="checkbox"/> Other _____				<input type="checkbox"/>		
<input type="checkbox"/> PID				<input type="checkbox"/>		
<input type="checkbox"/> HNu 10.2				<input type="checkbox"/>		
<input type="checkbox"/> HNu 11.7				<input type="checkbox"/>		
<input type="checkbox"/> Photovac, TMA				<input type="checkbox"/>		
<input type="checkbox"/> OVM				<input type="checkbox"/>		
<input type="checkbox"/> Other _____				<input type="checkbox"/>		
<input type="checkbox"/> FID				<input type="checkbox"/>		
<input type="checkbox"/> Fox 128				<input type="checkbox"/>		
<input type="checkbox"/> Heath, AID, Other				<input type="checkbox"/>		
<input type="checkbox"/> RAM, Mini-RAM, Other _____				<input type="checkbox"/>		
<input type="checkbox"/> Monitox				<input type="checkbox"/>		
Specify: _____				<input type="checkbox"/>		
<input type="checkbox"/> Personal Sampling				<input type="checkbox"/>		
Specify: _____				<input type="checkbox"/>		
<input type="checkbox"/> Bio-Aerosol Monitor				<input type="checkbox"/>		
<input type="checkbox"/> Pump - MSA, Dräger, Sensidyne				<input type="checkbox"/>		
<input type="checkbox"/> Tubes/type: _____				<input type="checkbox"/>		
<input type="checkbox"/> Tubes/type: _____				<input type="checkbox"/>		
<input type="checkbox"/> Other _____				<input type="checkbox"/>		

4.1 SITE OR PROJECT HAZARD MONITORING PROGRAM

4.1.2 Air Monitoring Instruments Calibration Record

[illegible]

4.2 SITE AIR MONITORING PROGRAM

Action Levels

These Action Levels, if not defined by regulation, are some percent (usually 50%) of the applicable PEL/TLV/REL. That number must also be adjusted to account for instrument response factors.

	Tasks	Action Level		Action
<input checked="" type="checkbox"/> Explosive atmosphere		Ambient Air Concentration	Confined Space Concentration	
		<10% LEL	0 to 1% LEL	Work may continue. Consider toxicity potential.
		10 to 25% LEL	1 to 10% LEL	Work may continue. Increase monitoring frequency.
		>25% LEL	>10% LEL	Work must stop. Ventilate area before returning.
<input checked="" type="checkbox"/> Oxygen		Ambient Air Concentration	Confined Space Concentration	
		<19.5% O ₂	<19.5% O ₂	Leave area. Re-enter only with self-contained breathing apparatus.
		19.5% to 25% O ₂	19.5% to 23.5% O ₂	Work may continue. Investigate changes from 21%.
		>25% O ₂	>23.5% O ₂	Work must stop. Ventilate area before returning.
<input type="checkbox"/> Radiation		< 3 times background 3 times background to < 1 mR/hour		Continue work. Radiation above background levels (normally 0.01-0.02 mR/hr) signifies possible radiation source(s) present. Continue investigation with caution. Perform thorough monitoring. Consult with a Health Physicist.
		> 1 mrem/hour		Potential radiation hazard. Evacuate site. Continue investigation only upon the advice of Health Physicist.
<input checked="" type="checkbox"/> Organic gases and vapors	All	TCE: NIOSH REL = Ca OSHA PEL = TWA 100ppm C 200ppm 300ppm (5-min max peak in any 2 hrs) PCE: NIOSH REL = Ca OSHA PEL = TWA 100ppm C 200ppm (for 5-mins in any 3 hr period) with max peak of 300ppm TCA: NIOSH REL = C 350ppm (1900 mg/m ³) [15-min] OSHA PEL = TWA 350ppm (1900 mg/m ³)		Work must stop. Upgrade PPE.
<input type="checkbox"/> Inorganic gases, vapors, and particulates	All			

4.3 ACTION LEVELS

(Attach action level calculations)

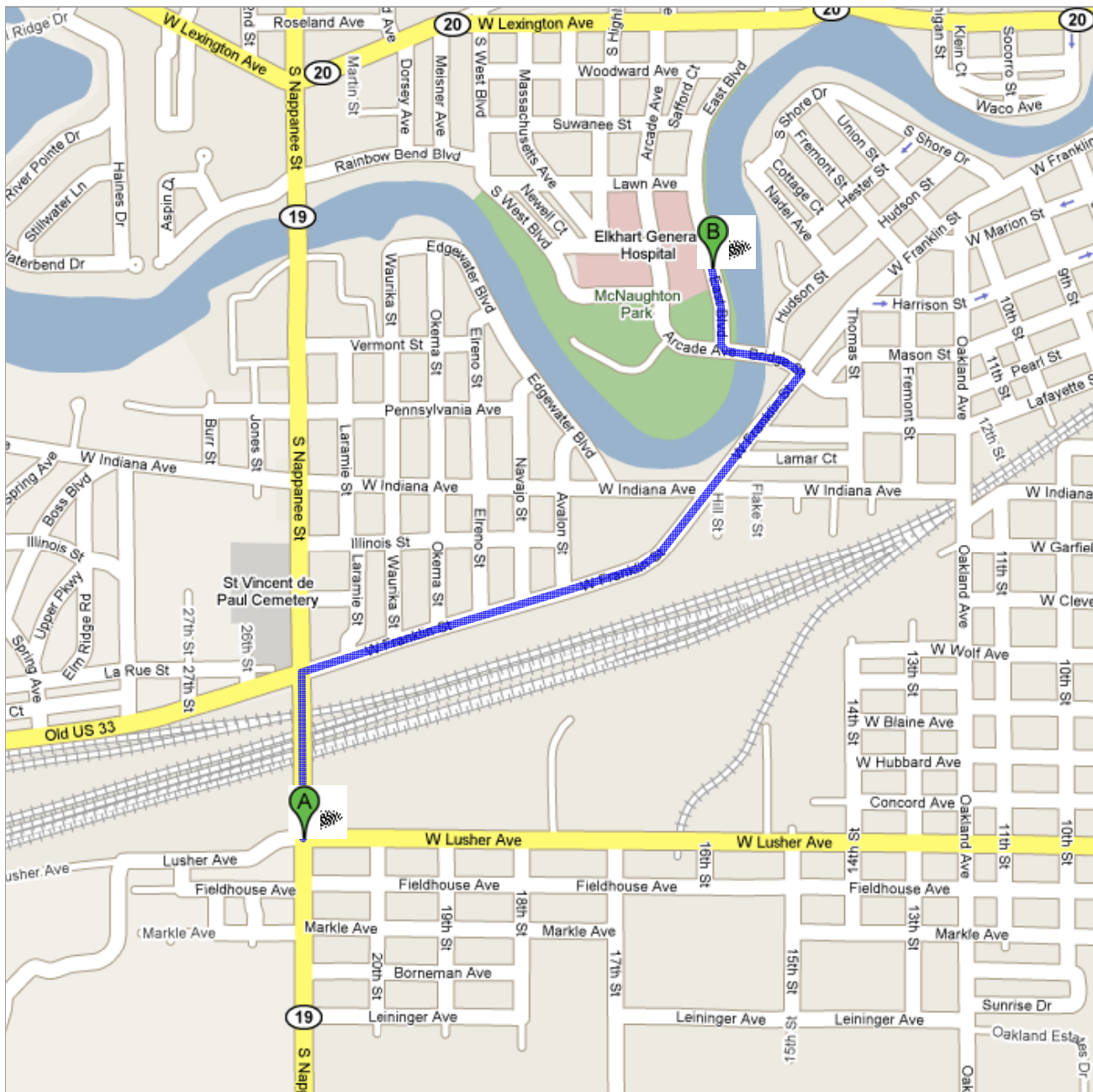
5. HOSPITAL INFORMATION



Directions to 600 East Blvd, Elkhart, IN 46514
1.3 mi – about 3 mins

Save trees. Go green!

Download Google Maps on your phone at google.com/gmm





W Lusher Ave & S Nappanee St
Elkhart, IN 46517

1. Head **north** on **IN-19/S Nappanee St**

go **0.2 mi**
total 0.2 mi



2. Turn **right** at **W Franklin St**
About 3 mins

go **0.9 mi**
total 1.1 mi



3. Turn **left** at **Bridge St**

go **0.1 mi**
total 1.2 mi



4. Turn **right** at **East Blvd**

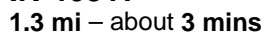
go **0.1 mi**
total 1.3 mi



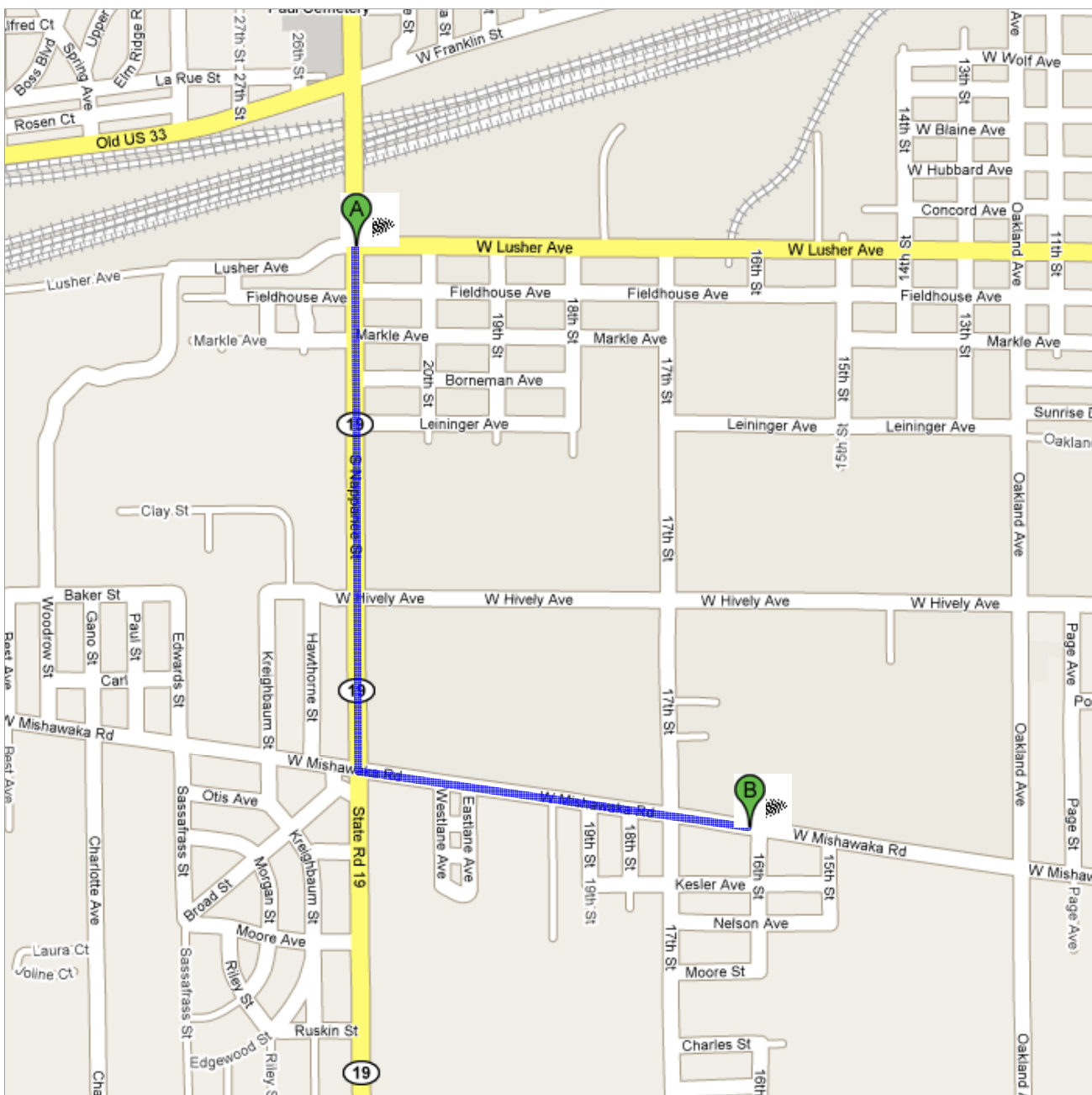
Elkhart General Healthcare Sys
600 East Blvd
Elkhart, IN 46514

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Map data ©2008 Tele Atlas



Download Google Maps on your phone at google.com/gmm





W Lusher Ave & S Nappanee St
Elkhart, IN 46517

1. Head **south** on **IN-19/S Nappanee St** toward **Fieldhouse Ave**

About 2 mins

go 0.7 mi

total 0.7 mi



2. Turn **left** at **W Mishawaka Rd**

About 2 mins

go 0.6 mi

total 1.3 mi



Elkhart County Fire Department
1612 W Mishawaka Rd
Elkhart, IN 46517

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

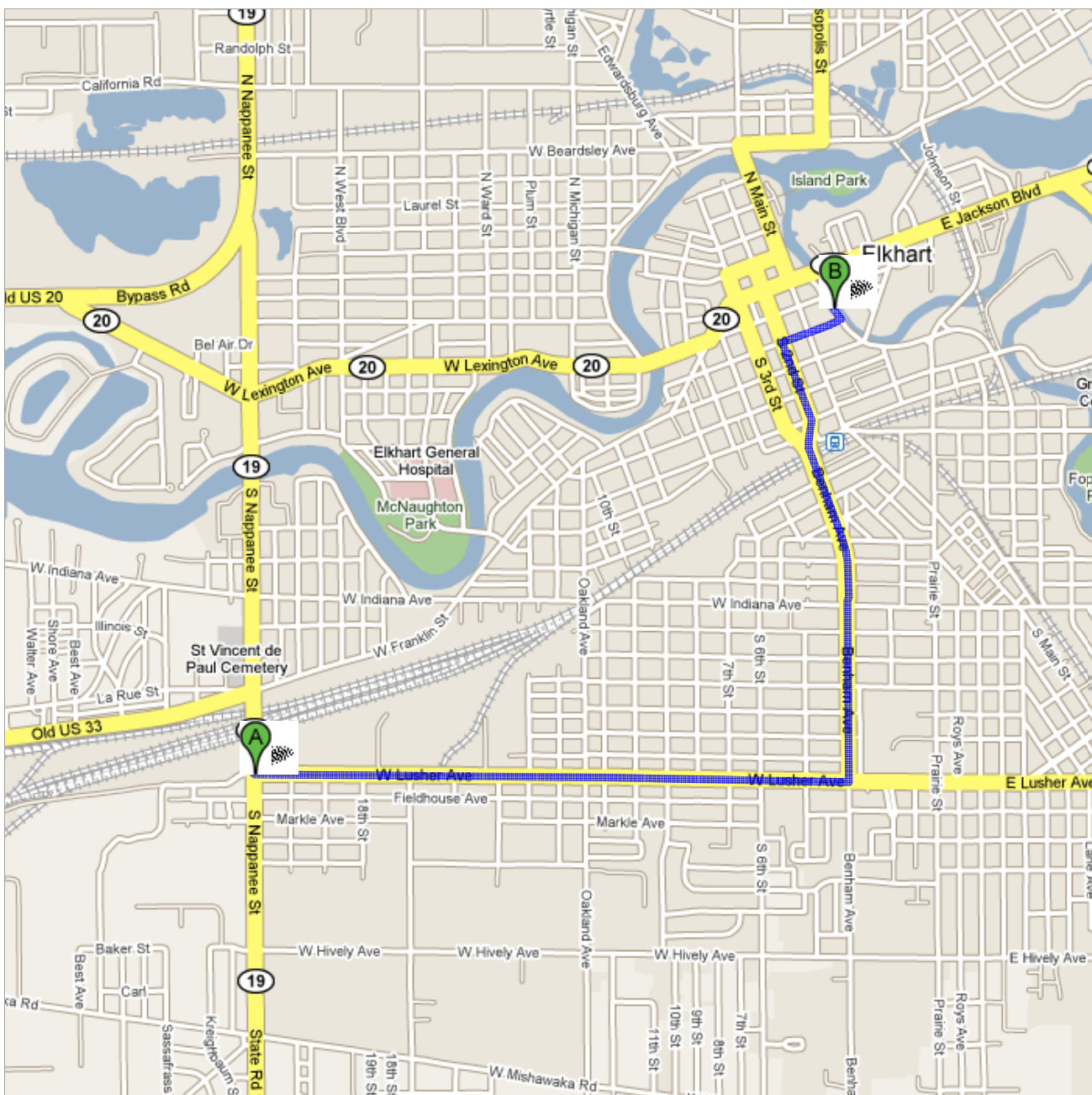
Map data ©2008 Tele Atlas



Directions to 175 Waterfall Dr, Elkhart, IN
46516
3.2 mi – about 6 mins

Save trees. Go green!

Download Google Maps on your
phone at google.com/gmm





W Lusher Ave & S Nappanee St
Elkhart, IN 46517

1. Head **east** on **W Lusher Ave** toward **20th St**

About 3 mins

go **1.7 mi**

total 1.7 mi



2. Turn **left** at **Benham Ave**

About 2 mins

go **1.1 mi**

total 2.7 mi



3. Slight **left** at **S 2nd St**

go **0.2 mi**

total 3.0 mi



4. Turn **right** at **W High St**

go **0.2 mi**

total 3.2 mi



5. Turn **left** at **Waterfall Dr**

go **203 ft**

total 3.2 mi



Elkhart Police Department
175 Waterfall Dr
Elkhart, IN 46516

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Map data ©2008 Tele Atlas

5.1 CONTINGENCIES

5.1.1 Emergency Contacts and Phone Numbers

Agency	Contact	Phone Number
WorkCare WESTON Medical Director WorkCare WESTON Program Administrator	Dr. Peter Greaney Michelle Bui	From 6 am to 4:30 pm Pacific Time call 800-455-6155 dial 0 or extension 175, Michelle Bui to request the on-call clinician.
After-Business Hours Contact (In Case of Emergency Only)		4:31 p.m. – 5:59 a.m. Pacific Time, all day Saturday, Sunday and Holidays call 800-455-6155 Dial 3 to reach the after-hours answering service. Request that the service connect you with the on-call clinician or the on-call clinician will return your call within 30 minutes.
WESTON Corporate Environmental Health & Safety Director	Owen B. Douglass, Jr.	610.701.3065 610.506.5392 (cell)
WESTON Medical Programs Manager	Carol Tarka	760.603.9910
WESTON Health & Safety Division Safety	Ted Deecke	847.337.4147
WESTON Health & Safety Local Safety Officer	Tonya Balla	847.528.2623
Fire Department	Elkhart County Fire Department	574.522.9811 and/or 911
Police Department	Elkhart Police Department	574.295.7070 and/or 911
WESTON FSO Cell Phone	Trenna Seilheimer	260.348.4911
WESTON PM Cell Phone	Om Patel	847.703.0881
Client Site Phone		
Site Telephone	Trenna Seilheimer	260.348.4911
Nearest Telephone	Trenna Seilheimer	260.348.4911

Local Medical Emergency Facility(s)

Name of Hospital: Elkhart General Hospital

Address: 600 East Boulevard, Elkhart, IN

Phone No.: 574.294.2621

Name of Contact: Emergency Room

Phone No.: 911

Type of Service:

- ☐ Physical trauma only
☐ Chemical exposure only
☒ Physical trauma and chemical exposure
☒ Available 24 hours

Route to Hospital:
(See Attached)

Travel time from site:

3 minutes

Distance to hospital:

1.3 miles

Name/no. of 24-hr ambulance service: 911

Secondary or Specialty Service Provider

Name of Hospital:

Address:

Phone No.:

Name of Contact:

Phone No.:

Type of Service:

- ☐ Physical trauma only
☐ Chemical exposure only
☐ Physical trauma and chemical exposure
☐ Available 24 hours

Route to Hospital (see attached):

Travel time from site:

Distance to hospital:

Name/no. of 24-hr ambulance service:
/

See reporting an incident in Attachment F.

5.1.2 Hospital Map

(Attach hospital map and directions)

5.1 CONTINGENCIES					
5.1.3 Response Plans					
Medical - General Provide first aid, if trained; assess and determine need for further medical assistance. Transport or arrange for transport after appropriate decontamination.	First Aid Kit: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Type Standard 20-man and infection control kit	Location In Vehicle	Special First-Aid Procedures: Cyanides on-site <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, contact LMF. Do they have antidote kit? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Blood Borne Pathogens Kit: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
	Eyewash required <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Type	Location	HF on-site <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, need neutralizing ointment for first-aid kit. Contact LMF.	
	Shower required <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Type	Location		
Plan for Response to Spill/Release		Plan for Response to Fire/Explosion		Fire Extinguishers	
In the event of a spill or release, ensure safety, assess situation, and perform containment and control measures, as appropriate.	a. Cleanup per MSDSs if small; or sound alarm, call for assistance, notify Emergency Coordinator b. Evacuate to pre-determined safe place c. Account for personnel d. Determine if team can respond safely e. Mobilize per Site Spill Response Plan	In the event of a fire or explosion, ensure personal safety, assess situation, and perform containment and control measures, as appropriate:	a. Sound alarm and call for assistance, notify Emergency Coordinator b. Evacuate to predetermined safe place c. Account for personnel d. Use fire extinguisher <u>only if safe and trained</u> in its use e. Stand by to inform emergency responders of materials and conditions	Type/Location <u>ABC/Vehicle</u> _____ / _____ _____ / _____ _____ / _____ _____ / _____ _____ / _____	
Description of Spill Response Gear _____ _____ _____	Location _____ _____ _____	Description (Other Fire Response Equipment) _____ _____ _____		Location _____ _____ _____	
Plan to Respond to Security Problems Check-in at each facility prior to drilling. Have signed access agreements on-site Ask person(s) to leave. Avoid confrontation. Call police department @ 911.					

6. DECONTAMINATION PLAN

6.1 GENERAL DECONTAMINATION PLAN

Personnel Decontamination

Consistent with the levels of protection required, step-by-step procedures for personnel decontamination for each level of protection are attached.

Levels of Protection Required for Decontamination Personnel

The levels of protection required for personnel assisting with decontamination will be:

☐

Level B

☐

Level C

☒

Level D

Modifications include:

Disposition of Decontamination Wastes

Provide a description of waste disposition including identification of storage area, hauler, and final disposal site, if applicable

All waste material generated will be placed in appropriate containers and stored on site for eventual disposal

Equipment Decontamination

A procedure for decontamination steps required for non-sampling equipment and heavy machinery follows:
Equipment will be steam cleaned, pressure washed, or wiped clean as appropriate on decon pad.

Sampling Equipment Decontamination

Sampling equipment will be decontaminated in accordance with the following procedure:

All non-dedicated sampling equipment (probes etc.) will be steam cleaned, pressure cleaned, or washed with an Alconox solution and rinsed with distilled water.

6.2 LEVEL D DECONTAMINATION PLAN

Check indicated functions or add steps, as necessary:

Function	Description of Process, Solution, and Container
<input type="checkbox"/> Segregated equipment drop	
<input type="checkbox"/> Boot cover and glove wash	
<input type="checkbox"/> Boot cover and glove rinse	
<input type="checkbox"/> Tape removal - outer glove and boot	
<input type="checkbox"/> Boot cover removal	
<input checked="" type="checkbox"/> Outer glove removal	trash bag
HOTLINE	
<input type="checkbox"/> Suit/safety boot wash	
<input type="checkbox"/> Suit/boot/glove rinse	
<input type="checkbox"/> Safety boot removal	
<input type="checkbox"/> Suit removal	
<input type="checkbox"/> Inner glove wash	
<input type="checkbox"/> Inner glove rinse	
<input type="checkbox"/> Inner glove removal	
<input type="checkbox"/> Inner clothing removal	
CONTAMINATION REDUCTION ZONE (CRZ)/SAFE ZONE BOUNDARY	
<input checked="" type="checkbox"/> Field wash	wash hands with soap and water
<input type="checkbox"/> Redress	
Disposal Plan, End of Day: All waste material generated will be place in appropriate containers and stored on site for eventual disposal	
Disposal Plan, End of Week: All waste material generated will be place in appropriate containers and stored on site for eventual disposal	
Disposal Plan, End of Project: All waste material generated will be place in appropriate containers and stored on site for eventual disposal	

6.3 LEVEL C DECONTAMINATION PLAN

Check indicated functions or add steps, as necessary:

Function	Description of Process, Solution, and Container
<input type="checkbox"/> Segregated equipment drop	
<input type="checkbox"/> Boot cover and glove wash	
<input type="checkbox"/> Boot cover and glove rinse	
<input type="checkbox"/> Tape removal - outer glove and boot	
<input type="checkbox"/> Boot cover removal	
<input type="checkbox"/> Outer glove removal	
HOTLINE	
<input type="checkbox"/> Suit/safety boot wash	
<input type="checkbox"/> Suit/boot/glove rinse	
<input type="checkbox"/> Safety boot removal	
<input type="checkbox"/> Suit removal	
<input type="checkbox"/> Inner glove wash	
<input type="checkbox"/> Inner glove rinse	
<input type="checkbox"/> Facepiece removal	
<input type="checkbox"/> Inner glove removal	
<input type="checkbox"/> Inner clothing removal	
CONTAMINATION REDUCTION ZONE (CRZ)/SAFE ZONE BOUNDARY	
<input type="checkbox"/> Field wash	
<input type="checkbox"/> Redress	
Disposal Plan, End of Day:	
Disposal Plan, End of Week:	
Disposal Plan, End of Project:	

6.4 LEVEL B DECONTAMINATION PLAN	
Check indicated functions or add steps, as necessary:	
Function	Description of Process, Solution, and Container
<input type="checkbox"/> Segregated equipment drop	
<input type="checkbox"/> Boot cover and glove wash	
<input type="checkbox"/> Boot cover and glove rinse	
<input type="checkbox"/> Tape removal - outer glove and boot	
<input type="checkbox"/> Boot cover removal	
<input type="checkbox"/> Outer glove removal	
HOTLINE	
<input type="checkbox"/> Suit/safety boot wash	
<input type="checkbox"/> Suit/SCBA/boot/glove rinse	
<input type="checkbox"/> Safety boot removal	
<input type="checkbox"/> Remove SCBA backpack without disconnecting	
<input type="checkbox"/> Splash suit removal	
<input type="checkbox"/> Inner glove wash	
<input type="checkbox"/> Inner glove rinse	
<input type="checkbox"/> SCBA disconnect and facepiece removal	
<input type="checkbox"/> Inner glove removal	
<input type="checkbox"/> Inner clothing removal	
CONTAMINATION REDUCTION ZONE (CRZ)/SAFE ZONE BOUNDARY	
<input type="checkbox"/> Field wash	
<input type="checkbox"/> Redress	
Disposal Plan, End of Day:	
Disposal Plan, End of Week:	
Disposal Plan, End of Project:	

7. TRAINING AND BRIEFING TOPICS/SIGN OFF SHEET

7.1 TRAINING AND BRIEFING TOPICS

The following items will be covered at the site-specific training meeting, daily or periodically.

<input checked="" type="checkbox"/> Site characterization and analysis, Sec. 3.0, 29 CFR 1910.120 l	<input type="checkbox"/> Level A
<input checked="" type="checkbox"/> Physical hazards, HASP Form 07	<input type="checkbox"/> Level B
<input checked="" type="checkbox"/> Chemical hazards, HASP Form 04	<input type="checkbox"/> Level C
<input checked="" type="checkbox"/> Animal bites, stings, and poisonous plants	<input checked="" type="checkbox"/> Level D
<input type="checkbox"/> Etiologic (infectious) agents	<input type="checkbox"/> Monitoring, 29 CFR 1910.120 (h)
<input checked="" type="checkbox"/> Site control, 29 CFR 1910.120 d	<input checked="" type="checkbox"/> Decontamination, 29 CFR 1910.120 (k)
<input type="checkbox"/> Engineering controls and work practices, 29 CFR 1910.120 (g)	<input type="checkbox"/> Emergency response, 29 CFR 1910.120 (l)
<input checked="" type="checkbox"/> Heavy machinery	<input type="checkbox"/> Elements of an emergency response, 29 CFR 1910.120 (l)
<input type="checkbox"/> Forklift	<input type="checkbox"/> Procedures for handling site emergency incidents, 29 CFR 1910.120 (l)
<input type="checkbox"/> Backhoe	<input type="checkbox"/> Off-site emergency response, 29 CFR 1910.120 (l)
<input checked="" type="checkbox"/> Equipment	<input checked="" type="checkbox"/> Handling drums and containers, 29 CFR 1910.120 (j)
<input checked="" type="checkbox"/> Tools	<input checked="" type="checkbox"/> Opening drums and containers
<input type="checkbox"/> Ladder, 29 CFR 1910.27 (d)/29 CFR 1926	<input type="checkbox"/> Electrical material handling equipment
<input checked="" type="checkbox"/> Overhead and underground utilities	<input type="checkbox"/> Radioactive waste
<input type="checkbox"/> Scaffolds	<input type="checkbox"/> Shock-sensitive waste
<input type="checkbox"/> Structural integrity	<input type="checkbox"/> Laboratory waste packs
<input type="checkbox"/> Unguarded openings - wall, floor, ceilings	<input type="checkbox"/> Sampling drums and containers
<input type="checkbox"/> Pressurized air cylinders	<input checked="" type="checkbox"/> Shipping and transport, 49 CFR 172.101, IATA
<input checked="" type="checkbox"/> Personal protective equipment, 29 CFR 1910.120 (g); 29 CFR 1910.134	<input type="checkbox"/> Tank and vault procedures
<input type="checkbox"/> Respiratory protection, 29 CFR 1910.120 (g); ANSI Z88.2	<input checked="" type="checkbox"/> Illumination, 29 CFR 1910.120 (m)
<input type="checkbox"/> Working over water FLD-19	<input checked="" type="checkbox"/> Sanitation, 29 CFR 1910.120 (n)
<input type="checkbox"/> Boating safety FLD-18	<input type="checkbox"/>
<input type="checkbox"/> Heat Stress	<input type="checkbox"/>
<input type="checkbox"/> Proper lifting techniques	<input type="checkbox"/>

7.2 HEALTH AND SAFETY PLAN APPROVAL/SIGNOFF FORM

Site Name: Lusher Street Groundwater Contamination Site

WO#: 20405.012.008.0506.00

Address: Elkhart, Elkhart County, Indiana

I understand, agree to, and will conform with the information set forth in this Health and Safety Plan (and attachments) and discussed in the personnel health and safety briefing(s).

Name

Signature

Date[illegible]

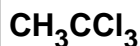
ATTACHMENT A
CHEMICAL CONTAMINANTS DATA SHEETS

NIOSH Pocket Guide to Chemical Hazards

[NPG Home](#) |
 [Introduction](#) |
 [Synonyms & Trade Names](#) |
 [Chemical Names](#) |
 [CAS Numbers](#) |
 [RTECS Numbers](#) |
 [Appendices](#) |
 [Search](#)

Methyl chloroform

CAS 71-55-6



RTECS [KJ2975000](#)

Synonyms & Trade Names

Chloroethene; 1,1,1-Trichloroethane; 1,1,1-Trichloroethane (stabilized)

DOT ID & Guide

2831 [160](#)

Exposure Limits

NIOSH REL: C 350 ppm (1900 mg/m³) [15-minute] [See Appendix C](#) (Chloroethanes)

OSHA PEL†: TWA 350 ppm (1900 mg/m³)

IDLH 700 ppm See: [71556](#)

Conversion 1 ppm = 5.46 mg/m³

Physical Description

Colorless liquid with a mild, chloroform-like odor.

MW: 133.4

BP: 165°F

FRZ: -23°F

Sol: 0.4%

VP: 100 mmHg

IP: 11.00 eV

Sp.Gr: 1.34

Fl.P: ?

UEL: 12.5%

LEL: 7.5%

Combustible Liquid, but burns with difficulty.

Incompatibilities & Reactivities

Strong caustics; strong oxidizers; chemically-active metals such as zinc, aluminum, magnesium powders, sodium & potassium; water [Note: Reacts slowly with water to form hydrochloric acid.]

Measurement Methods

NIOSH [1003](#)

See: [NMAM](#) or [OSHA Methods](#)

Personal Protection & Sanitation ([See protection codes](#))

Skin: Prevent skin contact

Eyes: Prevent eye contact

Wash skin: When contaminated

Remove: When wet or contaminated

Change: No recommendation

First Aid ([See procedures](#))

Eye: Irrigate immediately

Skin: Soap wash promptly

Breathing: Respiratory support

Swallow: Medical attention immediately

Respirator Recommendations NIOSH/OSHA

Up to 700 ppm:

(APF = 10) Any supplied-air respirator*

(APF = 50) Any self-contained breathing apparatus with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus

[Important additional information about respirator selection](#)

Exposure Routes inhalation, ingestion, skin and/or eye contact

Symptoms Irritation eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depression, poor equilibrium; dermatitis; cardiac arrhythmias; liver damage

Target Organs Eyes, skin, central nervous system, cardiovascular system, liver

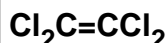
See also: [INTRODUCTION](#) See ICSC CARD: [0079](#) See MEDICAL TESTS: [0141](#)

NIOSH Pocket Guide to Chemical Hazards

[NPG Home](#) |
 [Introduction](#) |
 [Synonyms & Trade Names](#) |
 [Chemical Names](#) |
 [CAS Numbers](#) |
 [RTECS Numbers](#) |
 [Appendices](#) |
 [Search](#)

Tetrachloroethylene

CAS 127-18-4



RTECS [KX3850000](#)

Synonyms & Trade Names

Perchloroethylene, Perchloroethylene, Perk, Tetrachlorethylene

DOT ID & Guide

1897 [160](#)

Exposure Limits

NIOSH REL: Ca Minimize workplace exposure concentrations. [See Appendix A](#)

OSHA PEL †: †: TWA 100 ppm
C 200 ppm (for 5 minutes in any 3-hour period), with a maximum peak of 300 ppm

IDLH Ca [150 ppm] See: [127184](#)

Conversion 1 ppm = 6.78 mg/m³

Physical Description

Colorless liquid with a mild, chloroform-like odor.

MW: 165.8

BP: 250°F

FRZ: -2°F

Sol: 0.02%

VP: 14 mmHg

IP: 9.32 eV

Sp.Gr: 1.62

Fl.P: NA

UEL: NA

LEL: NA

Noncombustible Liquid, but decomposes in a fire to hydrogen chloride and phosgene.

Incompatibilities & Reactivities

Strong oxidizers; chemically-active metals such as lithium, beryllium & barium; caustic soda; sodium hydroxide; potash

Measurement Methods

NIOSH [1003](#); OSHA [1001](#)

See: [NMAM](#) or [OSHA Methods](#)

Personal Protection & Sanitation ([See protection codes](#))

Skin: Prevent skin contact

Eyes: Prevent eye contact

Wash skin: When contaminated

Remove: When wet or contaminated

Change: No recommendation

Provide: Eyewash, Quick drench

First Aid ([See procedures](#))

Eye: Irrigate immediately

Skin: Soap wash promptly

Breathing: Respiratory support

Swallow: Medical attention immediately

Respirator Recommendations NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus

[Important additional information about respirator selection](#)

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]

Target Organs Eyes, skin, respiratory system, liver, kidneys, central nervous system

Cancer Site [in animals: liver tumors]

See also: [INTRODUCTION](#) See ICSC CARD: [0076](#) See MEDICAL TESTS: [0179](#)

NIOSH Pocket Guide to Chemical Hazards

[NPG Home](#) |
 [Introduction](#) |
 [Synonyms & Trade Names](#) |
 [Chemical Names](#) |
 [CAS Numbers](#) |
 [RTECS Numbers](#) |
 [Appendices](#) |
 [Search](#)

Trichloroethylene		CAS 79-01-6
CICH=CCl₂		RTECS KX4550000
Synonyms & Trade Names Ethylene trichloride, TCE, Trichloroethene, Trilene		DOT ID & Guide 1710 160
Exposure Limits	NIOSH REL: Ca See Appendix A See Appendix C	
	OSHA PEL†: TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 2 hours)	
IDLH Ca [1000 ppm] See: 79016		Conversion 1 ppm = 5.37 mg/m ³
Physical Description Colorless liquid (unless dyed blue) with a chloroform-like odor.		
MW: 131.4	BP: 189°F	FRZ: -99°F
VP: 58 mmHg	IP: 9.45 eV	Sol(77°F): 0.1%
Fl.P: ?	UEL(77°F): 10.5%	LEL(77°F): 8%
Combustible Liquid, but burns with difficulty.		
Incompatibilities & Reactivities Strong caustics & alkalis; chemically-active metals (such as barium, lithium, sodium, magnesium, titanium & beryllium)		
Measurement Methods NIOSH 1022 , 3800 ; OSHA 1001 See: NMAM or OSHA Methods		
Personal Protection & Sanitation (See protection codes) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: No recommendation Provide: Eyewash, Quick drench		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
Respirator Recommendations NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus Important additional information about respirator selection		
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact		
Symptoms Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]		
Target Organs Eyes, skin, respiratory system, heart, liver, kidneys, central nervous system		
Cancer Site [in animals: liver & kidney cancer]		
See also: INTRODUCTION See ICSC CARD: 0081 See MEDICAL TESTS: 0236		

ATTACHMENT B
MATERIAL SAFETY DATA SHEETS
(ATTACH MSDSS)



Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

1,1,1-TRICHLOROETHANE

1. Product Identification

Synonyms: Methyl chloroform; trichloroethane; chloroetene

CAS No.: 71-55-6

Molecular Weight: 133.40

Chemical Formula: CH₃CCl₃

Product Codes: 9435, 9437, W509, W510

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Methyl Chloroform	71-55-6	96 - 100%	Yes
Dioxane	123-91-1	< 3%	Yes
1,2-Epoxybutane	106-88-7	< 0.5%	Yes
Actual concentrations proprietary			

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. AFFECTS CENTRAL NERVOUS SYSTEM, LIVER, KIDNEYS, AND CARDIOVASCULAR SYSTEM. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. POSSIBLE CANCER HAZARD. CONTAINS DIOXANE WHICH MAY CAUSE CANCER BASED ON ANIMAL DATA. Risk of cancer depends on duration and level of exposure.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Cancer Causing)

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Blue (Health)

Potential Health Effects

Inhalation:

Inhalation of vapors will irritate the respiratory tract. Affects the central nervous system. Symptoms include headache, dizziness, weakness, nausea. Higher levels of exposure (> 5000 ppm) can cause irregular heart beat, kidney and liver damage, fall in blood pressure, unconsciousness and even death.

Ingestion:

Harmful if swallowed. Symptoms similar to inhalation will occur along with nausea, vomiting. Aspiration of material into the lungs can cause chemical pneumonitis which can be fatal. If aspirated, may be rapidly absorbed through the lungs and result in injury to other body systems.

Skin Contact:

Causes mild irritation and redness, especially on prolonged contact. Repeated contact may cause drying or flaking of the skin.

Eye Contact:

Liquids and vapors cause irritation. Symptoms include tearing, redness, stinging, swelling.

Chronic Exposure:

Prolonged or repeated skin contact may cause dermatitis. Chronic exposure may affect the kidneys and liver. Dioxane is a suspected human carcinogen based on animal data.

Aggravation of Pre-existing Conditions:

Personnel with CNS, kidney, liver or heart disease may be more susceptible to the effects of this substance. Use of alcoholic beverages may aggravate symptoms.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:

In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Autoignition temperature: 500C (932F)

Flammable limits in air % by volume:

lcl: 7.0; ucl: 16.0

Vapors in containers can explode if subjected to high energy source.

Dioxane has a flash point below 16C (60F).

Explosion:

Can react with strong caustic, such as potash to form a flammable or explosive material. Air/vapor mixtures may explode when heated. Vapors can flow along surfaces to distant ignition source and flash back. Sealed containers may rupture when heated.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Combustion by-products include phosgene and hydrogen chloride gases. Structural firefighters' clothing provides only limited protection to the combustion products of this material.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! Do not use aluminum, magnesium or zinc metal for storage container. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product. Do not use aluminum equipment or storage containers. Contact with aluminum parts in a pressurized fluid system may cause violent reactions.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

-OSHA Permissible Exposure Limit (PEL):

350 ppm (TWA) for trichloroethane

100 ppm (TWA) skin for dioxane

-ACGIH Threshold Limit Value (TLV):

350 ppm (TWA), 450 ppm (STEL) for trichloroethane

20 ppm (TWA) skin, A3 - Animal Carcinogen for dioxane

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH

document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134). This substance has questionable warning properties. Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc. See 29CFR1910.134 for details.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Viton is a recommended material for personal protective equipment.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Clear, colorless liquid.

Odor:

Mild chloroform-like odor.

Solubility:

4,400 ppm in water @ 20C (68F)

Specific Gravity:

1.34 @ 20C/4C

pH:

No information found.

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

74C (165F)

Melting Point:

-32C (-26F)

Vapor Density (Air=1):

4.63

Vapor Pressure (mm Hg):

100 @ 20C (68F)

Evaporation Rate (BuAc=1):

12.8

10. Stability and Reactivity

Stability:

Requires inhibitor content to prevent corrosion of metals. Slowly hydrolyzes in water to form hydrochloric and acetic acid.

Hazardous Decomposition Products:

May produce carbon monoxide, carbon dioxide, hydrogen chloride and phosgene when heated to decomposition. Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization:

Hazardous polymerization can occur in contact with aluminum trichloride.

Incompatibilities:

Open flames, welding arcs, nitrogen tetroxide, oxygen, liquid oxygen, sodium, sodium hydroxide, and

sodium-potassium alloy, strong alkalis, oxidizers, aluminum and other reactive metals.

Conditions to Avoid:

Insufficient inhibitor, incompatibles, heat, flame and ignition sources

11. Toxicological Information

Oral rat LD50: 9600 mg/kg; inhalation rat LC50: 18000 ppm/4H; investigated as a mutagen, tumorigen, reproductive effector; irritation eye rabbit, Standard Draize, 2mg/24H severe.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	

Methyl Chloroform (71-55-6)	No	No	3
Dioxane (123-91-1)	No	Yes	2B
1,2-Epoxybutane (106-88-7)	No	No	2B

12. Ecological Information

Environmental Fate:

When released into the soil, this material is not expected to biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released to water, this material is expected to quickly evaporate. This material is not expected to significantly bioaccumulate. When released into the air, this material may be removed from the atmosphere to a moderate extent by wet deposition. When released to the atmosphere, this material has an average global half-life of 6.0 - 6.9 years. When released into the air, this material may adversely affect the ozone layer.

Environmental Toxicity:

This material is expected to be slightly toxic to aquatic life. The LC50/96-hour values for fish are between 10 and 100 mg/l.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: 1,1,1-TRICHLOROETHANE

Hazard Class: 6.1

UN/NA: UN2831

Packing Group: III

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia

Methyl Chloroform (71-55-6)	Yes	Yes	Yes	Yes
Dioxane (123-91-1)	Yes	Yes	Yes	Yes
1,2-Epoxybutane (106-88-7)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		
		DSL	NDSL	Phil.
-----		-----	---	---
Methyl Chloroform (71-55-6)	Yes	Yes	No	Yes
Dioxane (123-91-1)	Yes	Yes	No	Yes
1,2-Epoxybutane (106-88-7)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.

Methyl Chloroform (71-55-6)	No	No	Yes	No
Dioxane (123-91-1)	No	No	Yes	No
1,2-Epoxybutane (106-88-7)	No	No	Yes	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8(d)

Methyl Chloroform (71-55-6)	1000	U226	No
Dioxane (123-91-1)	100	U108	No
1,2-Epoxybutane (106-88-7)	100	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: No (Mixture / Liquid)

WARNING:

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

Australian Hazchem Code: 2[Z]

Poison Schedule: S6

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **2** Flammability: **1** Reactivity: **0**

Label Hazard Warning:

WARNING! HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. AFFECTS CENTRAL NERVOUS SYSTEM, LIVER, KIDNEYS, AND CARDIOVASCULAR SYSTEM. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. POSSIBLE CANCER HAZARD.

CONTAINS DIOXANE WHICH MAY CAUSE CANCER BASED ON ANIMAL DATA. Risk of cancer depends on duration and level of exposure.

Label Precautions:

Avoid breathing vapor.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Avoid contact with eyes, skin and clothing.

Label First Aid:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases call a physician.

Product Use:

Laboratory Reagent.

Revision Information:

No Changes.

Disclaimer:

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Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)



Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



Mallinckrodt
CHEMICALS



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

TETRACHLOROETHYLENE

1. Product Identification

Synonyms: ethylene tetrachloride; tetrachloroethene; perchloroethylene; carbon bichloride; carbon dichloride

CAS No.: 127-18-4

Molecular Weight: 165.83

Chemical Formula: Cl₂C:CCl₂

Product Codes:

J.T. Baker: 9218, 9360, 9453, 9465, 9469

Mallinckrodt: 1933, 8058

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Tetrachloroethylene	127-18-4	99 - 100%	Yes

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS. SUSPECT CANCER HAZARD. MAY CAUSE CANCER. Risk of cancer depends on level and duration of exposure.

SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Poison)

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 2 - Moderate (Life)

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Blue (Health)

Potential Health Effects

Inhalation:

Irritating to the upper respiratory tract. Giddiness, headache, intoxication, nausea and vomiting may follow the inhalation of large amounts while massive amounts can cause breathing arrest, liver and kidney damage, and death. Concentrations of 600 ppm and more can affect the central nervous system after a few minutes.

Ingestion:

Not highly toxic by this route because of low water solubility. Used as an oral dosage for hookworm (1 to 4 ml). Causes abdominal pain, nausea, diarrhea, headache, and dizziness.

Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain. May be absorbed through the skin with possible systemic effects.

Eye Contact:

Causes irritation, redness, and pain.

Chronic Exposure:

May cause liver, kidney or central nervous system damage after repeated or prolonged exposures. Suspected cancer risk from animal studies.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or eye problems or impaired liver or kidney function may be more susceptible to the effects of the substance. The use of alcoholic beverages enhances the toxic effects.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:

Aspiration hazard. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:

Wash skin with soap or mild detergent and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician:

Do not administer adrenaline or epinephrine to a victim of chlorinated solvent poisoning.

5. Fire Fighting Measures

Fire:

Not considered to be a fire hazard but becomes hazardous in a fire situation because of vapor generation and possible degradation to phosgene (highly toxic) and hydrogen chloride (corrosive). Vapors are heavier than air and collect in low-lying areas.

Explosion:

Not considered to be an explosion hazard. Containers may explode when involved in a fire.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire. Water spray may be used to keep fire exposed containers cool.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime), then absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Store in a cool, dry, ventilated area away from sources of heat or ignition. Isolate from flammable materials. Protect from direct sunlight. Wear special protective equipment (Sec. 8) for maintenance break-in or where exposures may exceed established exposure levels. Wash hands, face, forearms and neck when exiting restricted areas. Shower, dispose of outer clothing, change to clean garments at the end of the day. Avoid cross-contamination of street clothes. Wash hands before eating and do not eat, drink, or smoke in workplace. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

-OSHA Permissible Exposure Limit (PEL):

100 ppm (TWA), 200 ppm (ceiling),
300 ppm/5min/3-hour (max)

-ACGIH Threshold Limit Value (TLV):

25 ppm (TWA), 100 ppm (STEL); listed as A3, animal carcinogen

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Clear, colorless liquid.

Odor:

Ethereal odor.

Solubility:

0.015 g in 100 g of water.

Specific Gravity:

1.62 @ 20C/4C

pH:

No information found.

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

121C (250F)

Melting Point:

-19C (-2F)

Vapor Density (Air=1):

5.7

Vapor Pressure (mm Hg):

18 @ 25C (77F)

Evaporation Rate (BuAc=1):

0.33 (trichloroethylene = 1)

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage. Slowly decomposed by light. Deteriorates rapidly in warm, moist climates.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may form when heated to decomposition. Hydrogen chloride gas and phosgene gas may be formed upon heating. Decomposes with moisture to yield trichloroacetic acid and hydrochloric acid.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong acids, strong oxidizers, strong alkalis, especially NaOH, KOH; finely divided metals, especially zinc, barium, lithium. Slowly corrodes aluminum, iron and zinc.

Conditions to Avoid:

Moisture, light, heat and incompatibles.

11. Toxicological Information

Oral rat LD50: 2629 mg/kg; inhalation rat LC50: 4100 ppm/6H; investigated as a tumorigen, mutagen, reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Tetrachloroethylene (127-18-4)	No	Yes	2A

12. Ecological Information

Environmental Fate:

When released into the soil, this material is expected to quickly evaporate. When released into the soil, this material may leach into groundwater. When released into the soil, this material may biodegrade to a moderate extent. When released to water, this material is expected to quickly evaporate. When released into water, this material is not expected to biodegrade. This material is not expected to significantly bioaccumulate. When released into the air, this material may be moderately degraded by reaction with photochemically produced hydroxyl radicals.

Environmental Toxicity:

The LC50/96-hour values for fish are between 1 and 10 mg/l. The LC50/96-hour values for fish are between 10 and 100 mg/l. This material is expected to be toxic to aquatic life.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: TETRACHLOROETHYLENE
Hazard Class: 6.1
UN/NA: UN1897
Packing Group: III
Information reported for product/size: 4L

International (Water, I.M.O.)

Proper Shipping Name: TETRACHLOROETHYLENE
Hazard Class: 6.1
UN/NA: UN1897
Packing Group: III
Information reported for product/size: 4L

International (Air, I.C.A.O.)

Proper Shipping Name: TETRACHLOROETHYLENE

Hazard Class: 6.1

UN/NA: UN1897

Packing Group: III

Information reported for product/size: 4L

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----
Ingredient TSCA EC Japan Australia

Tetrachloroethylene (127-18-4) Yes Yes Yes Yes

-----\Chemical Inventory Status - Part 2\-----
Ingredient Korea --Canada-- DSL NDSL Phil.

Tetrachloroethylene (127-18-4) Yes Yes No Yes

-----\Federal, State & International Regulations - Part 1\-----
Ingredient -SARA 302- -----SARA 313-----
RQ TPQ List Chemical Catg.

Tetrachloroethylene (127-18-4) No No Yes No

-----\Federal, State & International Regulations - Part 2\-----
Ingredient CERCLA -RCRA- -TSCA-
261.33 8(d)

Tetrachloroethylene (127-18-4) 100 U210 No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: No (Pure / Liquid)

WARNING:

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

Australian Hazchem Code: 2[Z]

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 2 Flammability: 0 Reactivity: 0

Label Hazard Warning:

WARNING! HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS. SUSPECT CANCER HAZARD. MAY CAUSE CANCER. Risk of

cancer depends on level and duration of exposure.

Label Precautions:

Do not get in eyes, on skin, or on clothing.

Do not breathe vapor or mist.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Label First Aid:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases call a physician.

Product Use:

Laboratory Reagent.

Revision Information:

No Changes.

Disclaimer:

Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT BAKER, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.

Prepared by: Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)



Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



Mallinckrodt
CHEMICALS



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

TRICHLOROETHYLENE

1. Product Identification

Synonyms: Trichloroethene; TCE; acetylene trichloride; Ethynyl trichloride
CAS No.: 79-01-6
Molecular Weight: 131.39
Chemical Formula: C₂HCl₃
Product Codes:
J.T. Baker: 5376, 9454, 9458, 9464, 9473
Mallinckrodt: 8600, 8633

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Trichloroethylene	79-01-6	100%	Yes

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL IF SWALLOWED OR INHALED. AFFECTS HEART, CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS. CAUSES SEVERE SKIN IRRITATION. CAUSES IRRITATION TO EYES AND RESPIRATORY TRACT. SUSPECT CANCER HAZARD. MAY CAUSE CANCER. Risk of cancer depends on level and duration of exposure.

SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Poison)

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 3 - Severe

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: Blue (Health)

Potential Health Effects

Inhalation:

Vapors can irritate the respiratory tract. Causes depression of the central nervous system with symptoms of visual disturbances and mental confusion, incoordination, headache, nausea, euphoria, and dizziness.

Inhalation of high concentrations could cause unconsciousness, heart effects, liver effects, kidney effects, and death.

Ingestion:

Cases irritation to gastrointestinal tract. May also cause effects similar to inhalation. May cause coughing, abdominal pain, diarrhea, dizziness, pulmonary edema, unconsciousness. Kidney failure can result in severe cases. Estimated fatal dose is 3-5 ml/kg.

Skin Contact:

Cause irritation, redness and pain. Can cause blistering. Continued skin contact has a defatting action and can produce rough, dry, red skin resulting in secondary infection.

Eye Contact:

Vapors may cause severe irritation with redness and pain. Splashes may cause eye damage.

Chronic Exposure:

Chronic exposures may cause liver, kidney, central nervous system, and peripheral nervous system effects. Workers chronically exposed may exhibit central nervous system depression, intolerance to alcohol, and increased cardiac output. This material is linked to mutagenic effects in humans. This material is also a suspect carcinogen.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders, cardiovascular disorders, impaired liver or kidney or respiratory function, or central or peripheral nervous system disorders may be more susceptible to the effects of the substance.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician.

Skin Contact:

Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician:

Do not administer adrenaline or epinephrine to a victim of chlorinated solvent poisoning.

5. Fire Fighting Measures

Fire:

Autoignition temperature: 420C (788F)

Flammable limits in air % by volume:

lcl: 8; ucl: 12.5

Explosion:

A strong ignition source, e. g., a welding torch, can produce ignition. Sealed containers may rupture when heated.

Fire Extinguishing Media:

Use water spray to keep fire exposed containers cool. If substance does ignite, use CO₂, dry chemical or foam.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Combustion by-products include phosgene and hydrogen chloride gases. Structural firefighters' clothing provides only limited protection to the combustion products of this material.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

Trichloroethylene:

-OSHA Permissible Exposure Limit (PEL):

100 ppm (TWA), 200 ppm (Ceiling),

300 ppm/5min/2hr (Max)

-ACGIH Threshold Limit Value (TLV):

10 ppm (TWA) 25 ppm (STEL); A2 Suspected Human Carcinogen.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the

contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134). This substance has poor warning properties. Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc. See 29CFR1910.134 for details.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Neoprene is a recommended material for personal protective equipment.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Clear, colorless liquid.

Odor:

Chloroform-like odor.

Solubility:

Practically insoluble in water. Readily miscible in organic solvents.

Specific Gravity:

1.47 @ 20C/4C

pH:

No information found.

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

87C (189F)

Melting Point:

-73C (-99F)

Vapor Density (Air=1):

4.5

Vapor Pressure (mm Hg):

57.8 @ 20C (68F)

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage. Will slowly decompose to hydrochloric acid when exposed to light and moisture.

Hazardous Decomposition Products:

May produce carbon monoxide, carbon dioxide, hydrogen chloride and phosgene when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong caustics and alkalis, strong oxidizers, chemically active metals, such as barium, lithium, sodium, magnesium, titanium and beryllium, liquid oxygen.

Conditions to Avoid:

Heat, flame, ignition sources, light, moisture, incompatibles

11. Toxicological Information

Toxicological Data:

Trichloroethylene: Oral rat LD50: 5650 mg/kg; investigated as a tumorigen, mutagen, reproductive effector.

Reproductive Toxicity:

This material has been linked to mutagenic effects in humans.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Trichloroethylene (79-01-6)	No	Yes	2A

12. Ecological Information

Environmental Fate:

When released into the soil, this material may leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released to water, this material is expected to quickly evaporate. This material has an experimentally-determined bioconcentration factor (BCF) of less than 100. This material is not expected to significantly bioaccumulate. When released into the air, this material may be moderately degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life between 1 and 10 days.

Environmental Toxicity:

The LC50/96-hour values for fish are between 10 and 100 mg/l. This material is expected to be slightly toxic to aquatic life.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: TRICHLOROETHYLENE

Hazard Class: 6.1

UN/NA: UN1710

Packing Group: III

Information reported for product/size: 4L

International (Water, I.M.O.)

Proper Shipping Name: TRICHLOROETHYLENE

Hazard Class: 6.1

UN/NA: UN1710

Packing Group: III

Information reported for product/size: 4L

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----
Ingredient TSCA EC Japan Australia

Trichloroethylene (79-01-6) Yes Yes Yes Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient Korea DSL --Canada-- NDSL Phil.

Trichloroethylene (79-01-6) Yes Yes No Yes

-----\Federal, State & International Regulations - Part 1\-----

Ingredient -SARA 302- RQ TPQ List Chemical Catg. -----SARA 313-----

Trichloroethylene (79-01-6) No No Yes No

-----\Federal, State & International Regulations - Part 2\-----

Ingredient CERCLA -RCRA- 261.33 -TSCA- 8(d)

Trichloroethylene (79-01-6) 100 U228 No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: No (Pure / Liquid)

WARNING:

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

Australian Hazchem Code: None allocated.

Poison Schedule: S6

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 2 Flammability: 1 Reactivity: 0

Label Hazard Warning:

WARNING! HARMFUL IF SWALLOWED OR INHALED. AFFECTS HEART, CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS. CAUSES SEVERE SKIN IRRITATION. CAUSES IRRITATION TO EYES AND RESPIRATORY TRACT. SUSPECT CANCER HAZARD. MAY CAUSE CANCER. Risk of

cancer depends on level and duration of exposure.

Label Precautions:

Do not get in eyes, on skin, or on clothing.

Do not breathe vapor.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Keep away from heat and flame.

Label First Aid:

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases call a physician. Note to physician: Do not administer adrenaline or epinephrine to a victim of chlorinated solvent poisoning.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 8.

Disclaimer:

Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT BAKER, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.

Prepared by: Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

ATTACHMENT C

SAFETY PROCEDURES/FIELD OPERATING PROCEDURES (FLD OPS)

ATTACHMENT D
HAZARD COMMUNICATION PROGRAM

SITE-SPECIFIC HAZARD COMMUNICATION PROGRAM

Location-Specific Hazard Communication Program/Checklist

To ensure an understanding of and compliance with the Hazard Communication Standard, WESTON will use this checklist/document (or similar document) in conjunction with the WESTON Written Hazard Communication Program as a means of meeting site- or location-specific requirements.

While responsibility for activities within this document reference the WESTON Safety Officer (SO), it is the responsibility of all personnel to effect compliance. Responsibilities under various conditions can be found within the WESTON Written Hazard Communication Program.

To ensure that information about the dangers of all hazardous chemicals used by WESTON are known by all affected employees, the following Hazard Communication Program has been established. All affected personnel will participate in the Hazard Communication Program. This written program, as well as WESTON's Corporate Hazard Communication Program, will be available for review by any employee, employee representative, representative of OSHA, NIOSH, or any affected employer/employee on a multi-employer site.

- X Site or other location name/address: Lusher Street Groundwater Contamination Site
- X Site/Project/Location Manager: Om Patel
- X Site/Location Safety Officer: Trenna Seilheimer
- X List of chemicals compiled, format: x HASP ☐ Other: _____
- X Location of MSDS files: HASP
- ☐ Training conducted by: Name: _____ Date: _____
- ☐ Indicate format of training documentation: ☐ Field Log: ☐ Other: _____
- ☐ Client briefing conducted regarding hazard communication: _____
- ☐ If multi-employer site (client, subcontractor, agency, etc.), indicate name of affected companies: _____
- ☐ Other employer(s) notified of chemicals, labeling, and MSDS information: _____
- ☐ Has WESTON been notified of other employer's or client's hazard communication program(s), as necessary? ☐ Yes ☐ No

List of Hazardous Chemicals

A list of known hazardous chemicals used by WESTON personnel must be prepared and attached to this document or placed in a centrally identified location with the MSDSs. Further information on each chemical may be obtained by reviewing the appropriate MSDS. The list will be arranged to enable cross-reference with the MSDS file and the label on the container. The SO or Location Manager is responsible for ensuring the chemical listing remains up-to-date.

Container Labeling

The WESTON SO will verify that all containers received from the chemical manufacturer, importer, or distributor for use on-site are clearly labeled.

The SO is responsible for ensuring that labels are placed where required and for comparing MSDSs and other information with label information to ensure correctness.

Material Safety Data Sheets (MSDSs)

The SO is responsible for establishing and monitoring WESTON's MSDS program for the location. The SO will ensure that procedures are developed to obtain the necessary MSDSs and will review incoming MSDSs for new or significant health and safety information. He/she will see that any new information is passed on to the affected employees. If an MSDS is not received at the time of initial shipment, the SO will call the manufacturer and have an MSDS delivered for that product in accordance with the requirements of WESTON's Written Hazard Communication Program.

A log for, and copies of, MSDSs for all hazardous chemicals in use will be kept in the MSDS folder at a location known to all site workers. MSDSs will be readily available to all employees during each work shift. If an MSDS is not available, immediately contact the WESTON SO or the designated alternate. When a revised MSDS is received, the SO will immediately replace the old MSDS.

Employee Training and Information

The SO is responsible for the WESTON site-specific personnel training program. The SO will ensure that all program elements specified below are supplied to all affected employees.

At the time of initial assignment for employees to the work site, or whenever a new hazard is introduced into the work area, employees will attend a health and safety meeting or briefing that includes the information indicated below.

- Hazardous chemicals present at the work site.
- Physical and health risks of the hazardous chemicals.
- The signs and symptoms of overexposure.
- Procedures to follow if employees are overexposed to hazardous chemicals.
- Location of the MSDS file and Written Hazard Communication Program.
- How to determine the presence or release of hazardous chemicals in the employee's work area.
- How to read labels and review MSDSs to obtain hazard information.
- Steps WESTON has taken to reduce or prevent exposure to hazardous chemicals.
- How to reduce or prevent exposure to hazardous chemicals through the use of controls procedures, work practices, and personal protective equipment.
- Hazardous, nonroutine tasks to be performed (if any).
- Chemicals within unlabeled piping (if any).

Hazardous Nonroutine Tasks

When employees are required to perform hazardous nonroutine tasks, the affected employee(s) will be given information by the SO about the hazardous chemicals he or she may use during such activity. This information will include specific chemical hazards, protective and safety measures the employee can use, and steps WESTON is using to reduce the hazards. These steps include, but are not limited to, ventilation, respirators, presence of another employee, and emergency procedures.

Chemicals in Unlabeled Pipes

Work activities may be performed by employees in areas where chemicals are transferred through unlabeled pipes. Prior to starting work in these areas, the employee will contact the SO, at which time information as to the chemical(s) in the pipes, potential hazards of the chemicals or the process involved, and the safety precautions that should be taken will be determined and presented.

Multi-Employer Work Sites

It is the responsibility of the SO to provide other employers with information about hazardous chemicals imported by WESTON to which their employees may be exposed, along with suggested safety precautions. It is also the responsibility of the SO and the Site Manager to obtain information about hazardous chemicals used by other employers to which WESTON employees may be exposed. WESTON's chemical listing will be made available to other employers, as requested. MSDSs will be available for viewing, as necessary.

The location, format, and/or procedures for accessing MSDS information must be relayed to affected employees.

ATTACHMENT D
HAZARD COMMUNICATION PROGRAM

ATTACHMENT E
AIR SAMPLING DATA SHEETS

SITE AIR MONITORING PROGRAM

Field Data Sheets

Location:[illegible]**Location:**[illegible]

ATTACHMENT F
INCIDENT REPORTING

NOTIFICATION OF INCIDENT—INITIAL REPORT

The NOI form should be utilized to report ALL incidents. Incidents include: employee accidents, injuries, auto accidents, property damage/loss, information /data breaches, security concerns, subcontractor injuries/accidents/events, *OR other liability situations or circumstances that could give rise to a claim*. The NOI form is intended to be a preliminary summary (**due within 24 hours/one business day**) reporting what is immediately known of an event or situation. After a NOI report is released, and the appropriate resources within the organization are notified, an investigation should be initiated.

For **SECURITY INCIDENTS**. Initial notice and distribution via email limited to William Irwin, Corporate Security Manager, and Susan Hipp-Ludwick, Corporate Risk Manager. If incident is related to information /computer data concerns also include Joe Paquet, IS Technical Director in initial distribution.

SECTION 1: SECURITY INCIDENT SUMMARY (PROCEED TO ITEM #1 BELOW)

☐ THEFT ☐ VANDALISM ☐ THREAT / ASSAULT ☐ COMPUTERS ☐ OTHER

For **SAFETY-RELATED INCIDENTS/ACCIDENTS** involving an employee(s) or subcontractor. Submit written report via email to Susan Hipp-Ludwick and Matthew Dillon in Risk Management, and ... Owen Douglass of Corporate EH&S, the Direct Supervisor of the involved employee(s), the Safety Officer, the Client Service Manager (CSM), and the Division EH&S Manager. Distribution of safety related incidents should also include: Pat McCann, President; Alan Solow, COO; Ray Griffin, Senior VP of HR; the appropriate Division Manager(s), and involved employee if such person is not the person completing the NOI. Others may be added to the distribution as designated by a division, business team, profit center or project management.

OTHER INCIDENTS, including environmental and/or incidents that may give rise to a claim are to be reported in writing, and sent by email to Susan Hipp-Ludwick and Matt Dillon in the Risk Management, and appropriate project team members, profit center, and division/business line management **within 24 hours**. Include Owen Douglass in distribution of environmental incidents.

SECTION I: INCIDENT SUMMARY

☐ INJURY / ILLNESS ☐ AUTO ☐ SUBCONTRACTOR ☐ ENVIRONMENTAL ☐ OTHER
(e.g. property loss;
or circumstance that could give
rise to a claim)

-
1. DATE / TIME /LOCATION OF INCIDENT (Project, Office, or Other location. Include WO#):
 2. EMPLOYEE(S) / INDIVIDUAL(S) INVOLVED or WITNESS TO INCIDENT / EVENT:

JOB TITLE / ROLE: DIV./ PROFIT CENTER / ORG. UNIT
 3. DIRECT SUPERVISOR / AND OFFICE MANAGER OR PROJECT MANAGER (Whomever is Appropriate):
 4. DIVISION / LOCAL SAFETY OFFICER (if applicable):
 5. DESCRIPTION OF INCIDENT / POTENTIAL LIABILITY EXPOSURE/EVENT AND RESULTING INJURY / DAMAGES:
 6. WERE AUTHORITIES CONTACTED (police, government)? IF YES, IDENTIFY (i.e., agency name, case number, etc).

SECTION II: INJURY/IES

7. TREATING PHYSICIAN NAME, HOSPITAL, if Applicable:

8. CAN PERSONNEL RETURN TO WORK?

RESTRICTIONS, IF KNOWN :

SECTION III: IF VEHICLE OR EQUIPMENT INVOLVED

9. EQUIPMENT / VEHICLE INFORMATION (Year / Make / Model):

VIN:

OWNED ☐ RENTED ☐ ALLOWANCE ☐ PERSONALLY OWNED VEHICLE ☐

FOR ADDITIONAL INFORMATION, CONTACT (Name and Phone Number):

This is preliminary information, subject to change, and may contain errors. Any errors in this report will be corrected as follow-up investigation is conducted.

Investigative Reports and/or other documentation will often be necessary supplemental information supporting initial NOI report.

Questions can be directed to Susan Hipp-Ludwick at 610.701.3046 or Matt Dillon at 610.701.3667

ATTACHMENT G
AHA CHECKLIST AND ENVIRONMENTAL COMPLIANCE

HAZARD CHECKLIST Site Manager/EHS Officer:						Task Team (name or reference via daily sign-in sheet)			
Date: Location: Address:									
HAZARDS IDENTIFIED (check those applicable)									
	Chemical		Biological		Physical		Aerial lifts		Remote Areas
<input type="checkbox"/>	Flammable/combustible	<input type="checkbox"/>	Insects	<input type="checkbox"/>	Noise	<input type="checkbox"/>	Man. Material Handling	<input type="checkbox"/>	Materials handling
<input type="checkbox"/>	Corrosive	<input type="checkbox"/>	Animals	<input type="checkbox"/>	Heat	<input type="checkbox"/>	Demolition	<input type="checkbox"/>	High Pressure Washers
<input type="checkbox"/>	Oxidizer	<input type="checkbox"/>	Plants	<input type="checkbox"/>	Cold	<input type="checkbox"/>	Excavation	<input type="checkbox"/>	Hand and Power Tools
<input type="checkbox"/>	Reactive	<input type="checkbox"/>	Mold/Fungus	<input type="checkbox"/>	Inclement Weather	<input type="checkbox"/>	Pile Driving	<input type="checkbox"/>	Low Illumination
<input type="checkbox"/>	Toxic	<input type="checkbox"/>	Viral/Bacterial	<input type="checkbox"/>	Hot Work	<input type="checkbox"/>	Welding/Cutting/Burn	<input type="checkbox"/>	Drilling & Boring
<input type="checkbox"/>	Inhalation	<input type="checkbox"/>	Density Gauges	<input type="checkbox"/>	Confined Spaces	<input type="checkbox"/>	Hot Surfaces	<input type="checkbox"/>	Striking against/Struck-by
<input type="checkbox"/>	Eyes/Skin	<input type="checkbox"/>	Radiological	<input type="checkbox"/>	Stored hazardous Energy	<input type="checkbox"/>	Hot Materials	<input type="checkbox"/>	Caught-in/Caught between
<input type="checkbox"/>	Pesticides	<input type="checkbox"/>	Ultra-Violet	<input type="checkbox"/>	Elevation	<input type="checkbox"/>	Rough Terrain	<input type="checkbox"/>	Pushing/pulling
<input type="checkbox"/>	Carcinogen	<input type="checkbox"/>	Sunlight	<input type="checkbox"/>	Utilities	<input type="checkbox"/>	Compressed Gases	<input type="checkbox"/>	Falls at same level
<input type="checkbox"/>	Asbestos	<input type="checkbox"/>	Infrared	<input type="checkbox"/>	Machinery	<input type="checkbox"/>	Hazardous Mat. Storage	<input type="checkbox"/>	Falls from elevation
<input type="checkbox"/>	Lead	<input type="checkbox"/>	Lasers	<input type="checkbox"/>	Mobile equipment	<input type="checkbox"/>	Diving	<input type="checkbox"/>	Repetitive motion
<input type="checkbox"/>	UXO/OE/ CWM	<input type="checkbox"/>	XRF	<input type="checkbox"/>	Cranes	<input type="checkbox"/>	Operation of Boats	<input type="checkbox"/>	High (>110v) Electricity
<input type="checkbox"/>	Process Safety	<input type="checkbox"/>	Isotopes	<input type="checkbox"/>	Manual Material Handling	<input type="checkbox"/>	Working Over Water	<input type="checkbox"/>	Slippery surface Ice/Snow
<input type="checkbox"/>	Applying Paint/Coatings	<input type="checkbox"/>		<input type="checkbox"/>	Ladders	<input type="checkbox"/>	Traffic	<input type="checkbox"/>	
<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	Scaffolding	<input type="checkbox"/>	Site Security	<input type="checkbox"/>	
REQUIRED PROTECTION (check those applicable)									
	Engineering Controls		Administrative Control		PPE				Contingency
<input type="checkbox"/>	Guard Rails	<input type="checkbox"/>	Qualified for task	<input type="checkbox"/>	Air Supplying Respirator	<input type="checkbox"/>	Tyvek coveralls	<input type="checkbox"/>	Emergency Signal Known
<input type="checkbox"/>	Machine Guards	<input type="checkbox"/>	Trained/Certified	<input type="checkbox"/>	Air Purifying Respirator	<input type="checkbox"/>	Coated Coveralls	<input type="checkbox"/>	Eye wash/shower Location
<input type="checkbox"/>	Sound Barriers	<input type="checkbox"/>	Hot Work Permit	<input type="checkbox"/>	SCBA	<input type="checkbox"/>	Welding leathers	<input type="checkbox"/>	First Aid Kit Location
<input type="checkbox"/>	Enclosure	<input type="checkbox"/>	CSE Permit	<input type="checkbox"/>	Hard Hat	<input type="checkbox"/>	CWM	<input type="checkbox"/>	Fire Extinguisher Location
<input type="checkbox"/>	Elevation	<input type="checkbox"/>	Lockout/Tag Out	<input type="checkbox"/>	Ear Plugs	<input type="checkbox"/>	Safety Shoes/Boots	<input type="checkbox"/>	Spill Kit Location
<input type="checkbox"/>	Isolation	<input type="checkbox"/>	Work Permit	<input type="checkbox"/>	Ear Muffs	<input type="checkbox"/>	Rubber Boots	<input type="checkbox"/>	Severe weather shelter
<input type="checkbox"/>	GFCI	<input type="checkbox"/>	Dig Safe Permit	<input type="checkbox"/>	Safety Glasses	<input type="checkbox"/>	Gloves	<input type="checkbox"/>	Evacuation Routes
<input type="checkbox"/>	Assured Ground Program	<input type="checkbox"/>	Contingency Plan	<input type="checkbox"/>	Goggles	<input type="checkbox"/>	Cooling Suits		
<input type="checkbox"/>	Apply Anti-slip/skid Mat	<input type="checkbox"/>	Critical Lift Plans	<input type="checkbox"/>	Chemical Goggles	<input type="checkbox"/>	Ice Vests		
		<input type="checkbox"/>	Equip. Inspection Sheets	<input type="checkbox"/>	Face Shield	<input type="checkbox"/>	Radiant heat Suits		
				<input type="checkbox"/>	Thermal Shield	<input type="checkbox"/>	Fall Arrest		
				<input type="checkbox"/>	Welding Mask	<input type="checkbox"/>	PFD		
				<input type="checkbox"/>	Cutting Glasses	<input type="checkbox"/>	Electrical insulation		
Any Modification to Tasks (list)				Other tasks or activities that may affect my activity			Reasons for any changes indicated above		

Environmental Compliance Considerations:

<input type="checkbox"/>	Generation of Hazardous Waste*	<input type="checkbox"/>	→Waste Identification & Manifesting - Marking, Placarding, Labeling
<input type="checkbox"/>	Generation of Investigation Derived Waste*	<input type="checkbox"/>	→Training & Licensing for Use of Radioactive Materials/Sources
<input type="checkbox"/>	Treatment, Storage, or Disposal of Hazardous Waste*	<input type="checkbox"/>	→ Containers: dated, labeled, closed, full, stored less than 90 days
<input type="checkbox"/>	Contingency to prevent or contain hazardous materials or oil spills or discharges to drains, body of water, soil*	<input type="checkbox"/>	→ Risk of explosion or catastrophic release due to chemical storage or processing involving reactivity, flammables, solvents or explosives
<input type="checkbox"/>	Disturbing of Asbestos Containing Materials (ACM)*	<input type="checkbox"/>	→Training & Licensing for Asbestos Remediation Activities
<input type="checkbox"/>	Application of Pesticides or Herbicides*	<input type="checkbox"/>	
<input type="checkbox"/>	Work on Above or Under-ground Storage Tanks*	<input type="checkbox"/>	
<input type="checkbox"/>	Transportation, Storage or Disposal of Radioactive Material*	<input type="checkbox"/>	
<input type="checkbox"/>	Activities producing or generating Air Emissions (or fugitive "fence-line" emissions) requiring either monitoring and/or permit*	<input type="checkbox"/>	
<input type="checkbox"/>	Excavations, Drilling, Probing or other activities that could impact underground utilities, pipelines, sewer or treatment systems.	<input type="checkbox"/>	
<input type="checkbox"/>	Shipment of Hazardous Waste off-site*	<input type="checkbox"/>	
<input type="checkbox"/>	Shipment of Samples in accordance with DOT/IATA	<input type="checkbox"/>	

* Indicates need for an environmental compliance plan.

ATTACHMENT H
TRAFFIC CONTROL PLAN

ATTACHMENT I
AUDIT FORMS

ATTACHMENT J
ENVIRONMENTAL HEALTH & SAFETY INSPECTION CHECKLIST

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

Project Name: _____

Inspector: _____

Submit to: _____

Date: _____

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

THE WESTON SITE APPEARANCE

YES	NO		COMMENT
		Is the site secured to prevent inadvertent, unnecessary, or unauthorized access? Are gates closed and locked at any time that the access point is not occupied or visible to site workers?	
		Are access points posted with signs to indicate client and end-user client name, WESTON's name and logo, names of other contractors and sub-contractors, project name and location, and appropriate safety messages?	
		Are required postings in place (e.g., Labor Poster, Emergency Phone Numbers, Site Map, etc.)?	
		Are site trailers tied down per local code and provided with stairs that have a landing platform with guard and stair railings?	
		Is a Site Safety file system established in the office to maintain records required by applicable safety regulations	
		Is the Health and Safety Plan (HASP) or Accident Prevention Plan (APP) amended as scope of work changes, hazards are discovered or eliminated or if risk change?	
		Is the Site Safety Plan and the Safety Officers Field Manual on site?	
		Is new employee indoctrination provided?	
		Have site Rules been provided, discussed and signed off on by all employees	
		Incident Reporting procedure explained to all?	
		Is site management trained in the WESTON (and client as applicable) Incident Reporting system?	
		Are NOI and Supplemental Report forms and OSHA 300 Log available on site?	
		Is Site Management aware of the Case Management and Incident Investigation Procedures?	
		Is there a list of preferred provider medical facilities available?	
		Has the "Inspection By A Regulatory Agency" procedure been reviewed by all site management?	
		Will Competent Persons be required because of activities to be performed, equipment to be used or hazards to be encountered?	

POLICIES

YES	NO		COMMENT
		Each individual employee is aware that he or she responsible for complying with applicable safety requirements, wearing prescribed safety equipment and preventing avoidable accidents.	
		Do employees understand that they will wear clothing suitable for existing weather and work conditions and the minimum work uniform will include long pants, sleeved work shirts, protective footwear, hard hat, and safety glasses unless otherwise specified via the HASP.	
		Are employees provided safety and health training to enable them to perform their work safely ? Is all training documented to indicate the date of the session, topics covered, and names of participants?	
		Safety meetings are conducted daily. The purpose of the meetings are to review past activities, review pertinent tailgate safety topics and establish safe working procedures for anticipated hazards encountered during the day.	
		Training has been provided to all personnel regarding handling of emergency situations that may arise from the activity or use of equipment on the project.	
		Employees/contractors are informed and understand that they may not be under the influence of alcohol, narcotics, intoxicants or similar mind-altering substances at any time. Employees found under the influence of or consuming such substances will be immediately removed from the job site.	
		Site workers and operators of any equipment or vehicles are able to read and understand the signs, signals and operating instructions of their use.	
		Have contractors performing work provided copies of relevant documentation (such as medical fit-for-duty, training certificates, fit-tests, etc.) prior to initiation of the project?	

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

SANITATION

29 CFR 1926 Subparts C, D. EM 385-1-1, Section 2

YES	NO		COMMENT
		Is an adequate supply of drinking water provided. Is potable/drinking water labeled as such? Are there sufficient drinking cups provided?	
		Is there a sufficient number of toilets?	
		Are washing facilities readily available and appropriate for the cleaning needs?	
		Are washing facilities kept sanitary with adequate cleansing and drying materials?	
		Waste is secured so as not to attract rodents, insects or other vermin?	
		Is an effective housekeeping program established and implemented?	

ACCIDENT PREVENTION SIGNS, TAGS, LABELS, SIGNALS, AND PIPING SYSTEM IDENTIFICATION

29 CFR 1926 Subpart G. EM 385-1-1, Section 8

YES	NO		COMMENT
		Are signs, tags, and labels provided to give adequate warning and caution of hazards and instruction/directions to workers and the public?	
		Are all employees informed as to the meaning of the various signs, tags and labels used in the workplace and what special precautions are required?.	
		Are construction areas posted with legible traffic signs at points of hazard?	
		Are signs required to be seen at night lighted or reflectorized?	
		Tags contain a signal word ("danger" or "caution") and a major message to indicate the specific hazardous condition or the instruction to be communicated to the employee. Tags follow requirements as outlined in 29 CFR 1926.200.	

MEDICAL SERVICES AND FIRST AID

29 CFR 1926 Subparts C, D. EM 385-1-1, Section 3

YES	NO		COMMENT
		Is a local medical emergency facility (LMEF) identified in the HASP or APP?	
		Has the LMEF been visited to verify the directions and establish contacts?	
		Has site management reviewed WESTON's incident management procedures?	
		Have clinics and specialists that will help WESTON manage injuries and illnesses been identified?	
		Is there at least two (2) people certified in First Aid and CPR?	
		Are first aid kits available at the command post and appropriate remote locations?	
		Are first Aid Kits and Eyewash/Safety Showers inspected weekly?	
		Are 15 minute eyewash/safety showers in place if required.	

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

FIRE PREVENTION AND PROTECTION 29 CFR 1926 Subpart F. EM 385-1-1, Section 9

YES	NO		COMMENT
		Is an Emergency Response and Contingency Plan in place?	
		Are emergency phone numbers posted?	
		Are fire extinguishers selected and provided based on the types of materials and potential fire classes in each area.	
		Are fire extinguishers provided in each administrative and storage trailer, within 50 ft but no closer than 25 ft of any fuel or flammable liquids storage, on welding and cutting equipment, on mechanical equipment?	
		Are fire extinguishers checked daily and inspected monthly?	
		Do site personnel know the location of fire extinguishers and how to use them?	
		Are flammable and combustible liquids stored in approved containers?	
		Safety cans are used for dispensing flammable or combustible liquids in 5 gallon or less volumes.	
		Are flammable and combustible liquids stored in flammable storage cabinets or appropriate storage areas?	
		Are flammable materials separated from oxidizers by at least 20 feet (or 5 foot tall, ½ -hour rated fire wall) when in storage?	
		Are fuel storage tanks double walled or placed in a lined berm?	
		Spills are cleaned up immediately and wastes are disposed of properly.	
		Combustible scrap, debris and waste material (oily rags) are stored in closed metal containers and disposed of promptly.	
		Vehicle fueling tanks are grounded and bonding between the tank and vehicle being fueled is provided?	
		LPG is stored, handled and used according to OSHA regulations 29 CFR 1926.	
		LPG cylinders are not stored indoors.	
		Is a hot work permit program in place? See WESTON FLD-36	
		Is smoking limited to specific areas, prohibited in flammable storage areas and are signs posted to this effect?	

HAZARDOUS SUBSTANCES, AGENTS AND ENVIRONMENTS 29 CFR 1926 Subparts D, Z. EM 385-1-1, Sections 6, 28

YES	NO		COMMENT
		Are operations, materials and equipment evaluated to determine the presence of hazardous contaminants or if hazardous agents could be released in the work environment?	
		Are MSDS for substances made available at the work-site when any hazardous substance is procured, used, or stored?.	
		Are all containers and piping containing hazardous substances labeled appropriately?	
		Is there an inventory of hazardous substances?	
		Is there a site Specific Hazard Communication Program?	
		Spill kits appropriate for the hazardous materials present are on site and their location is known to spill responders.	
		Is disposal of excess hazardous chemicals performed according to WESTON's guidelines and RCRA regulations.	
		Before initiation of activities where there is an identified asbestos or lead hazard, is there a written plan detailing compliance with OSHA and EPA asbestos or lead abatement requirements? Does the plan comply with state and local authority, and USACE requirements, as applicable?	
		Are personnel trained and provided with protection against hazards from animals, poisonous plants and insects?	

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

PERSONAL PROTECTIVE AND SAFETY EQUIPMENT, RESPIRATORY AND FALL PROTECTION 29 CFR 1926 Subparts D, E, M. EM 385-1-1, Section 5

YES	NO		COMMENT
		Do employees understand that the minimum PPE is hard hat, safety glasses with side shields and safety shoes or boots and that long pants and a sleeved shirt are required?	
		Has the SSHC reviewed the PPE requirements in the HASP against actual site conditions and certified that the PPE is appropriate? (see Field Manual, PPE Program)	
		PPE is inspected, tested and maintained in serviceable and sanitary condition as recommended by the manufacturer. Is defective or damaged equipment taken out of service and repaired or replaced?	
		Are workers trained in the use of the PPE required?	
		Are personnel exposed to vehicular or equipment traffic, including signal persons, spotters or inspectors required to vests or apparel marked with a reflective or high visibility material?	
		Is there a noise hazard? If yes, hearing protection will be required.	
		Is there a splash or splatter hazard? Face shields or goggles will be required.	
		Will personnel be working in or over water? Personnel Floatation devices will be required.	
		Is there a welding hazard? Welding helmet and leathers will be required. Is there a cutting torch hazard? Goggles and protective clothing will be required.	
		Is each person on a walking/working surface with an unprotected side or edge which is 6 feet (1.8 m) or more above a lower level protected from falling by the use of guardrail systems, safety net systems or personal fall arrest systems? See WESTON FLD 25 (Note General Industry standard is four feet).	
		Guardrail systems are used as primary protection whenever feasible. Guardrail construction meets criteria in 29 CFR 1926.502(b).	
		Personal fall arrest systems (PFAS) are inspected and appropriate for use.	
		Ropes and straps (webbing) used in lanyards, lifelines, and strength components of body belts and body harnesses are from synthetic fibers.	
		Safety nets and safety net installations are constructed, tested and used according to 29 CFR 1926.502.c	
		Is respirator use required? See WESTON Respiratory Protection Program	
		Persons using respiratory protection have been successfully medically cleared, trained and fit tested.	
		Respirators are used according to the manufacturer's instructions, regulatory requirements, selection criteria and health and safety plan provisions.	
		For Level C operations with organic vapor contamination, is the cartridge change-out schedule documented?	
		Is breathing certified as Grade D, or better, and certification available on-site?	

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

MACHINERY AND MECHANIZED EQUIPMENT 29 CFR 1926 Subparts N, O. EM 385-1-1, Sections 16, 17, 18

YES	NO	COMMENT
		Are inspections of machinery by a competent person established?
		Is equipment inspected daily before its next use?
		Equipment inspection reports are reviewed, followed-up on negative findings and records of inspections are maintained?
		Machinery or equipment found to be unsafe is taken out of service until the unsafe condition has been corrected.
		Is there a preventive maintenance program established?
		Are operators of equipment qualified and authorized to operate?
		Is all self-propelled construction and industrial equipment equipped with a reverse signal alarm?
		Are seats or equal protection provided for each person required to ride on equipment. Are seatbelts installed and worn on motor vehicles, as appropriate.
		All equipment with windshields is equipped with powered wipers. If fogging or frosting is possible, operable defogging or defrosting devices are required.
		Internal combustion engines are not operated in enclosed areas unless adequate ventilation are made. Air monitoring is conducted to assure safe working conditions.
		Is each bulldozer, scraper, dragline, crane, motor grader, front-end loader, mechanical shovel, backhoe, or similar equipment equipped with at least one dry chemical or carbon dioxide fire extinguisher with a minimum rating of 5-B:C?
		Will cranes or other lifting devices be used? If so, are the following documents available on site: 1) a copy of the operating manual, 2) load rating chart, 3) log book, 4) a copy of the last annual inspection and 5) the initial on-site inspection?
		Do operators have certificates of training to operate the type of crane(s) to be used?
		Is a signal person provided when the point of operation is not in full view of the vehicle, machine or equipment operator? When manual (hand) signals are used, is only one person designated to give signals to the operator?
		Signal persons back one vehicle at a time. While under the control of a signal person, drivers do not back or maneuver until directed. Drivers stop if contact with the signal person is lost.
		Is a critical lift plan prepared by a competent person whenever: a lift is not routine, or a lift exceeds 75% of a crane's capacity, a lift results in the load being out of the operator's line of sight, or a lift involves more than one crane, a man basket is used, or the operator believes there is a need for a critical lift plan.
		Fork Lifts (Powered Industrial Trucks) - Will forklifts be used on site?
		All fork lifts meet the requirements of design, construction, stability, inspection, testing, maintenance and operation as indicated in ANSI/ASME B56.1 Safety Standards for Low Lift and High Lift Trucks.
		Do forklift operators have certificates of training?
		Are pile driving operations conducted according to EM 385-1-1, Section 16.L?
		Is drilling equipment operated, inspected, and maintained as specified in the manufacturer's operating manual? Is a copy of the manual available at the work-site? See also the Drilling Safety Guide in the Safety Officers Field Manual.
		Are flag persons provided when operations or equipment on or near a highway expose workers to traffic hazards? Do flag persons and persons working in proximity to a road wear high visibility vests? Are persons exposed to highway vehicle traffic protected by signs in all directions warning of the presence of the flag persons and the work? Do signs and distances from the work zone conform to federal and local regulations?

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

MOTOR VEHICLES 29 CFR 1926 Subpart O. EM 385-1-1, Section 18

YES	NO		COMMENT
		Motor vehicle operators have a valid permit, license, or certification of ability for the equipment being operated.	
		Inspection, maintenance and repair is according to manufacturer's requirements by qualified persons.	
		Vehicles are inspected on a scheduled maintenance program.	
		Vehicles not in safe operating condition are removed from service until defects are corrected.	
		Glass in windshields, windows, and doors is safety glass. Any cracked or broken glass is replaced.	
		Seatbelts are installed and worn.	
		The number of passengers in passenger-type vehicles does not exceed the number which can be seated.	
		Trucks used to transport personnel have securely anchored seating, a rear endgate, and a guardrail.	
		No person is permitted to ride with arms or legs outside of a vehicle body; in a standing position on the body; on running boards; seated on side fenders, cabs, cab shields, rear of the truck or on the load.	
		ATV operators possess valid state drivers license, have completed an ATV training course prior to operation of the vehicle, and wear appropriate protective equipment such as helmets, boots, and gloves.	

7.3

EXCAVATING AND TRENCHING 29 CFR 1926 Subpart P. EM 385-1-1, Section 25

YES	NO		COMMENT
		Has the known or estimated location of utility installations such as sewer, telephone, fuel, electric, water lines, or any other underground installations that may be expected to be encountered during excavation been determined before excavation? Have utility locations been verified by designated state services according to state regulations? Has the client provided clearance where state jurisdiction doesn't apply?	
		Have overhead utilities in excavation areas been identified and either de-energized, shielded or barricaded so excavating equipment will not come within 10 feet?	
		Are inspections of the excavation, the adjacent areas, and protective systems made daily and as necessary by a competent person?	
		Are Protective systems in place as prescribed by the competent person?	
		Is material removed from excavations managed so it will not overwhelm the protective systems?	
		Are barriers provided between excavations and walkways?	
		Are excavations by roadways barricaded to warn vehicles of presence or to prevent them from falling in?	
		Is there a means of exit from the excavation every 25 feet?	
		Is air monitoring required? If yes, Is it performed?	

CONFINED SPACES 29 CFR 1910 Subpart J. EM 385-1-1, Section 6

YES	NO		COMMENT
		Is there a Confined Space Entry Program in place?	
		Are the confined Spaces identified and labeled?	
		Will the Confined Spaces be entered?	
		Is appropriate entry documentation used and on-file?	

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

ELECTRICAL 29 CFR 1926 Subpart K. EM 385-1-1, Section 11

YES	NO	COMMENT
		Are electrical installations made according to the National Electrical Code and applicable local codes?
		Qualified electricians make all connections and perform all work within 10 feet of live electric equipment.
		Location of underground, overhead, under floor, behind wall electrical lines is known and communicated. Lines are documented by qualified person as de-energized where necessary.
		Workers understand they must not work near live parts of electric circuits, unless they are qualified as required by OSHA or are protected by de-energizing and grounding the parts, guarding the parts by insulation, or other effective means?
		Employees who regularly work on or around energized electrical equipment or lines are instructed in the cardiopulmonary resuscitation (CPR) methods.
		Workers are prohibited from working alone on energized lines or equipment over 600 volts.
		Are Ground-fault circuit interrupters (GFCI's) or is ground fault circuit protection provided to protect employees from ground-fault hazards for all 115 – 120 Volt, 15 and 20 amp receptacle outlets which are not a part of the permanent wiring of a building or structure at construction sites?
		Circuit breakers are labeled.
		Circuit breaker and all cabinets with exposed electric conductors are kept tightly closed.
		Unused openings (including conduit knockouts) in electrical enclosures and fittings are closed with appropriate covers, plugs or plates.
		Sufficient access and working space is provided and maintained about all electrical equipment to permit ready and safe operations and maintenance.
		Motors are located within sight of their controllers or controller disconnecting means are capable of being locked in the pen position or is a separate disconnecting means installed in the circuit within sight of the motor.
		Are visual inspections of extension cords and cord-and plug-connected equipment conducted daily? Is equipment found damaged or defective tagged and removed from service, and not used until repaired?
		Wet Areas - Is portable lighting used in wet or conductive locations, such as tanks or boilers operated at no more than 12 volts and protected by GFCIs.
		Are electrical installations in hazardous areas to NEC?
		Metal ladders and tools including tape measures or fabric with metal thread are prohibited where contact with energized electrically parts is possible.
		All extension cords are the three-wire type, designed and rated for hard or extra hard usage?
		Worn or frayed electrical cords or cables are taken out of service. Fastening with staples, hanging from nails or suspending extension cords by wire is prohibited.
		Electric wire/flexible cord passing through work areas is protected from damage such as foot traffic, vehicles, sharp corners, projections and pinching? Flexible cords and cables passing through holes are protected by bushings or fittings?
		Before an employee or contractor performs any service or maintenance on a system where the unexpected energizing, start up, or release of kinetic or stored energy could occur and cause injury or damage, the system is to be isolated. Only authorized persons may apply and remove lockouts and tags.
		Contractors planning to use hazardous energy control procedures submit their hazardous energy control plan to the WESTON site safety officer or designee before implementing lockout/tagout procedures.
		There is a site specific hazardous energy control plan that clearly and specifically outlines the scope, purpose, authorization, rules and techniques to be used for the control of hazardous energy.
		Workers possess the knowledge and skills required for the safe application, usage and removal of energy controls.

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

WELDING AND CUTTING 29 CFR 1926 Subpart J. EM 385-1-1, Section 10

YES	NO		COMMENT
		Prior to performing welding, cutting or any other heat or spark producing activity, an assessment of the area is made by a competent person to identify combustible materials and potential sources of flammable atmospheres.	
		Welders, cutters and their supervisors are trained in the safe operation of their equipment, safe welding and cutting practices, hot work permit requirements, and fire protection.	
		Welding and cutting equipment is inspected daily before use. Unsafe equipment is taken out of use, replaced or repaired.	
		Workers and the public is shielded from welding rays, flashes, sparks, molten metal and slag.	
		Employees performing welding, cutting or heating are protected by PPE appropriate for the hazards (e.g., respiratory, vision and skin protection).	
		Compatible fire extinguishing equipment is provided in the immediate vicinity of welding or cutting operations.	
		Drums, tanks, or other containers and equipment which have contained hazardous materials shall be thoroughly cleaned before welding or cutting. Cleaning shall be performed in accordance with NFPA 327, <u>Cleaning or Safeguarding Small Tanks and Containers</u> , ANSI/AWS F4.1, <u>Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances</u> , and applicable health and safety plan requirements.	

HAND AND POWER TOOL SAFETY 29 CFR 1926 Subpart I. EM 385-1-1, Section 13

YES	NO		COMMENT
		Power tools are from a manufacturer listed by a nationally recognized testing laboratory for the specific application for which they are to be used.	
		Hand & power tools are inspected, maintained, tested and determined to be in safe operating condition before use.	
		Tools found to be unsafe are not used, tagged and repaired or destroyed.	
		Users of tools are trained in safe use.	
		Electrical tools have cords and plug connections in good repair.	
		Electrical tools are effectively grounded or approved double insulated.	
		Reciprocating, rotating, and moving parts of equipment are guarded if they may be accessed by employees or they otherwise create a hazard.	
		Safety clips/retainers are installed and maintained on pneumatic impact tool connections.	
		Chain saws have an automatic chain brake or anti-kickback device.	
		Pneumatic and hydraulic hoses and fittings are inspected regularly.	
		Employees who operate powder actuated tools are trained and carry valid operators cards.	
		Powder activated tools are stored in individual locked containers, when not in use and are not loaded until ready to use.	
		Powder actuated tools are inspected for obstructions or defects daily before use.	
		Powder actuated tool operators have appropriate PPE.	

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

RIGGING

29 CFR 1926 Subpart H. EM 385-1-1, Section 15

YES	NO		COMMENT
		Rigging equipment is inspected as specified by the manufacturer, by a qualified person, before use on each shift and as necessary to assure that it is safe.	
		Defective equipment is removed from service.	
		Rigging not in use is removed from the work area, properly stored, and maintained in good condition.	
		Wire rope removed from service for defects is cut up or plainly marked as unfit for use as rigging.	
		The number of saddle clips used to form eyes in wire rope conforms with Table H-20, are spaced evenly and the saddles are on the live side.	
		Chain rigging has a tag clearly indicating load limits, is inspected before initial use, then weekly, and is of alloyed metal.	
		Fiber rope rigging is not used if it is frozen or has been subject to acids or excessive heat.	
		Slings and their fittings and fastenings are inspected before use on each shift and as needed during use.	
		Drums, sheaves, and pulleys on rigging hardware are smooth and free of surface defects that can damage rigging.	

MATERIAL HANDLING, STORAGE, AND DISPOSAL

29 CFR 1926 Subpart H. EM 385-1-1, Section 14

YES	NO		COMMENT
		Employees are trained in and use safe lifting techniques.	
		Materials are not moved or suspended over workers unless positive precautions have been taken to protect workers.	
		Conveyors are constructed, inspected, & maintained by qualified persons according to manufacturer's recommendations.	
		All conveyors are to be equipped with emergency stopping devices.	
		Hazardous exposed moving machine parts are guarded mechanically, electrically or by location.	
		Controls are clearly marked and/or labeled to indicate the function controlled.	
		Taglines are used for suspended loads where the movement may be hazardous to persons.	
		Material in storage is protected from falling or collapse by effective stacking, blocking, cribbing, etc.	
		Walkways and aisles are to be kept clear.	
		Materials are not stored on scaffolds or runways in excess of normal placement or in excess of safe load limits.	
		Work areas and means of access are maintained safe and orderly.	
		Tools, materials, extension cords, hoses or debris do not cause tripping or other hazards.	
		Storage and construction sites are kept free from the accumulation of combustible materials.	
		Waste materials and rubbish are placed in containers or, if appropriate, in piles. Waste materials are disposed of in accord with applicable local, state, or federal requirements.	

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

FLOATING PLANT AND MARINE ACTIVITIES 29 CFR 1926 Subpart O. EM 385-1-1 Section 19

YES	NO		COMMENT
		Floating plants that are regulated by the USCG have current inspections and certificates.	
		Before any floating plant is brought to the job site and placed in service it is inspected and determined to be in safe operating condition	
		Periodic inspections are made such that safe operating conditions are maintained. Strict compliance with EM 385-1-1, Section 19 is expected.	
		Plans are in place for removing or securing the plant and evacuation of personnel endangered by severe weather and other marine emergencies such as; fire, flooding, man overboard, hazardous materials incidents, etc..	
		Means of access are properly secured, guarded, and maintained free of slipping and tripping hazards.	
		Dredging operations follow guidelines as established in EM 385-1-1, Section 19.D.	

PRESSURIZED EQUIPMENT AND SYSTEMS 29 CFR 1926 Subparts I, F. EM 385-1-1, Section 20

YES	NO		COMMENT
		Pressurized equipment and systems are inspected before being placed into service.	
		Pressurized equipment or systems found to be unsafe are tagged "Out of Service-Do Not Use".	
		Systems and equipment are operated, inspected and maintained by qualified, designated personnel.	
		Safe clearance, lockout/tagout procedures are followed as appropriate during maintenance or repair.	
		Air hose, pipes, fittings are pressure-rated for the activity. Defective hoses are removed from service.	
		Hoses aren't laid over ladders, steps, scaffolds, or walkways in a manner that creates a tripping hazard.	
		The use of compressed air for personal cleaning is prohibited. The use of compressed air for other cleaning is restricted to less than 30 psig.	
		Compressed gas cylinders are stored in well-ventilated locations.	
		Cylinders in storage are separated from flammable or combustible liquids and from easily ignitable materials by at least 40 feet or by a minimum five feet tall, ½ -hour fire resistive partition.	
		Stored cylinders containing oxidizing gases are separated from fuel gas cylinders by at least 20 feet or by a minimum five feet tall, ½ -hour fire resistive partition.	
		Cylinder valve caps are in place when cylinders are in storage, in transit, or a regulator is not in place.	
		Compressed gas cylinders in service are secured in substantial fixed or portable racks or hand trucks.	
		Oxygen cylinders and fittings are kept away from, and free from oil and grease.	
		Cylinder Storage areas are posted with the names of the gases in storage and with signs indicating "No Smoking or Open Flame".	
		Cylinders are to be stored such that mechanical and corrosion damage is avoided. Cylinders are not to be stored in areas required as an egress path.	
		Cylinders may be stored in the open outdoors, however, they must be protected from the ground to prevent corrosion and must be protected from temperatures that may exceed 125 degrees F.	

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

WORK PLATFORMS/SCAFFOLDS 29 CFR 1926 Subparts L, M, N. EM 385-1-1 Sections 21, 22

YES	NO	COMMENT
		Work platforms are erected, used, inspected, tested, maintained and repaired according to manufacturer's requirements.
		Construction, inspection, and disassembly of scaffolds is under the direction of a competent person.
		Workers on scaffolding have been trained by a qualified person.
		Scaffolds are erected on a firm and level surface and are square and plumb.
		Scaffolds are not loaded in excess of rated capacity.
		Working levels of work platforms are fully planked or decked.
		Planks are in good condition and free from obvious defects.
		Fabricated frame scaffolding four times higher than the base width is secured to building/structure according to manufacturer's instruction and/or OSHA requirements.
		Working platforms of scaffolding over ten feet in height have guard rails meeting OSHA specifications. Fall protection is suggested at four feet or greater.
		Scaffolding/work platforms are accessed by means of a properly secured ladder or equivalent. Built on ladders conform to scaffold ladder requirements. Climbing of braces is not allowed.
		Crane supported work platforms are designed and used in accordance with OSHA standards.
		Elevating work platforms are operated, inspected and maintained according to the equipment operations manual.
		Employees working in aerial lifts remain firmly on the floor of the basket. Employees use fall protection while in an aerial lift basket.

WALKING AND WORKING SURFACES AND STAIRS 29 CFR 1926 Subparts L, M, X. EM 385-1-1, Sections 21, 22, 24

YES	NO	COMMENT
		Work areas are clean, sanitary, and orderly
		Work surfaces are kept dry or appropriate means are taken to assure the surfaces are slip-resistant
		Accumulations of combustible dust are routinely removed.
		Aisles and passageways are kept clear and marked as appropriate.
		There is safe clearance for walking in aisles where motorized or mechanical handling equipment is operating.
		Materials or equipment is stored in such a way that sharp projections will not interfere with the walkway.
		Changes of direction or elevation are readily identifiable.
		Aisles or walkways that pass near moving or operating machinery, welding operations or similar operations are arranged so employees will not be subjected to potential hazards.
		Standard guardrails are provided wherever aisle or walkway surfaces are elevated more than 30 inches above any adjacent floor or the ground and bridges provided where workers must cross over conveyors and similar hazards.
		There are standard stair rails or handrails on all stairways having four or more risers or with an elevation of 30 or more inches.
		Stairways are at least 22 inches wide. (General Industry Standard)
		Stairs angle no more than 50 and no less than 30 degrees, risers are uniform from top to bottom (plus or minus 1/4 inch) and are provided with a surface that renders them slip resistant.
		Stairway handrails are not less than 36 inches above the leading edge of stair treads and have at least 3 inches of clearance between the handrails and the wall or surface they are mounted on.
		Where doors or gates open directly on a stairway, there is a platform provided so the swing of the door does not reduce the width of the platform to less than 20 inches.
		Where stairs or stairways exit directly into any area where vehicles may be operated, there are adequate barriers and warnings provided to prevent employees stepping into the path of traffic.
		Signs are posted showing the load capacity of elevated storage areas.
		An appropriate means of access and egress is provided for surfaces with 19 or more inches of elevation change.
		Material on elevated surfaces is minimized, with that necessary for immediate work requirements piled, stacked or racked in a manner to prevent it from tipping, falling, collapsing, rolling or spreading.

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

FLOOR AND WALL HOLES AND OPENINGS 29 CFR 1926 Subpart M. EM 385-1-1, Section 24

YES	NO		COMMENT
		Floor and roof openings that persons can walk into or fall through are guarded by a physical barrier or covered.	
		Holes (defined as equal to or greater than 2 inches in least dimension) where person could trip must be covered/protected.	
		Unprotected sides and edges on a walking/working surface six feet or more (note four feet in General Industry) are protected by guardrail system, safety net or Personal Fall Arrest System (PFAS).	
		Unused portions of service pits and pits not actually in use are either covered or protected by guardrails or equivalent.	
		Coverings for holes or other openings must be constructed of sufficient strength to support any anticipated load, must be secured in place to prevent accidental removal or displacement and must be marked indicating purpose (e.g., stenciled "Hole" or painted contrasting color to surroundings).	

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

LADDERS

29 CFR 1926 Subpart X. EM 385-1-1, Section 21

YES	NO		COMMENT
		Portable ladders are used for their designed purpose only.	
		Portable ladders are examined for defects prior to, and after use.	
		Ladders found to be defective are clearly tagged to indicate "DO NOT USE" if repairable, or destroyed immediately if no repair is possible.	
		Workers are trained in hazards associated with ladder use and how to inspect ladders.	
		Ladders have secure footing provided by a combination of safety feet, top of ladder tie-offs and mud cills or a person holding the ladder to prevent slipping.	
		The handrails of a straight ladder used to get from one level to another extend at least 36 inches above the landing.	
		Ladders conform to construction criteria of ANSI Standards A-14.1 and A-14.2.	
		Wooden ladders are not painted with an opaque covering such that signs of flaws, cracks or drying are obscured.	
		Fixed ladders are constructed and used according to OSHA Standards, 29 CFR 1910.27 and ANSI A-14.3.	
		Rungs, cleats or steps, and side rails that may be used for handholds when climbing, offer adequate gripping surface and are free of splinters, slivers or burrs, and substances that could cause slipping.	
		Fixed ladders of greater than 24 feet have cages or other approved fall protection devices. (note General Industry is 20 feet).	
		Where fall protection is provided by ladder safety systems (body belts or harnesses, lanyards and braking devices with safety lines or rails), systems meet the requirements of and are used in accordance with WESTON Fall Protection Standard Practices and are compatible with construction of the ladder system.	

DEMOLITION

29 CFR 1926 Subpart T. EM 385-1-1, Section 23

YES	NO		COMMENT
		Prior to initiating demolition activities an engineering survey (by a competent person) and a demolition plan (by a competent person) is completed.	
		All employees engaged in demolition activities are instructed in the demolition plan.	
		It has been determined through the engineering survey and outlined in the plan, if any hazardous materials, or conditions (e.g., asbestos, lead, utility connections, etc.) exist. Such hazards are controlled or eliminated before demolition is started.	
		Continued inspections, by a competent person, are conducted to ensure safe employee working conditions.	

TREE MAINTENANCE AND REMOVAL

29 CFR 1910 Subpart R. EM 385-1-1, Section 31

YES	NO		COMMENT
		Tree maintenance or removal is done under the direction of a qualified person.	
		Tree work, in the vicinity of charged electric lines, is by trained persons qualified to work with electricity and tree work. Appropriate distances are maintained for all workers who are not qualified.	
		Equipment is inspected, maintained, repaired and used in accordance with the manufacture's directions.	
		Prior to felling actions are planned to include clearing of the area to permit safe working conditions and escape.	
		Employees must be trained in the safe operation of all equipment.	
		All equipment and machinery is inspected and determined safe prior to use.	
		Work is performed under requirements of FLD 43.	

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

BLASTING 29 CFR 1926 Subpart U. EM 385-1-1, Section 29

YES	NO		COMMENT
		A blasting safety plan is developed prior to bringing explosives on-site.	
		The transportation, handling, storage, and use of explosives, blasting agents, and blasting equipment must be directed and supervised by a person with proven experience and ability in blasting operations. Licensing of person is verified.	
		Blasting operations in or adjacent to cofferdams, piers, underwater structures, buildings, structures, or other facilities must be carefully planned with full consideration to potential vibration and damage.	

HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE AND UNDERGROUND STORAGE TANK (UST) ACTIVITIES 29 CFR 1926 Subpart D. EM 385-1-1, Section 28

YES	NO		COMMENT
		All construction activities performed with known or potential exposure to hazardous waste are conducted in accordance with Hazardous Waste Operations and Emergency Response requirements.	

CONCRETE and MASONRY CONSTRUCTION 29 CFR 1926 Subpart Q. EM 385-1-1, Section 27

YES	NO		COMMENT
		Construction loads are not placed on a concrete or masonry structure or portion of a concrete or masonry structure unless the employer determines, based on information from a person who is qualified in structural design, that the structure or portion of the structure is capable of supporting the loads.	
		Employees are not permitted to work above or in positions exposed to protruding reinforcing steel or other impalement hazards unless provisions have been made to control the hazard.	
		Sections of concrete conveyances and airlines under pressure are secured with wire rope (or equivalent material) in addition to the regular couplings or connections.	
		Structural and reinforcing steel for walls, piers, columns, and similar vertical structures is supported and/or guyed to prevent overturning or collapse	
		All form-work, shoring, and bracing is designed, fabricated, erected, supported, braced, and maintained so it will safely support all vertical and lateral loads that may be applied until the loads can be supported by the structure.	
		Shoring equipment is inspected prior to erection to determine that it is specified in the shoring design. Any equipment found to be damaged is not used.	
		Erected shoring equipment is inspected immediately prior to, during, and immediately after the placement of concrete. Any shoring equipment that is found to be damaged, displaced, or weakened is immediately reinforced or re-shored.	
		Shoring, vertical slip forms and jacks conform with requirements of Section 27.B.08-13 of USACE EM 385-1-1.	
		Forms and shores (except those on slab or grade and slip forms) are not removed until the individual responsible for forming and/or shoring determines that the concrete has gained sufficient strength to support its weight and all superimposed loads.	
		Precast concrete members are adequately supported to prevent overturning or collapse until permanent connections are complete	
		No one is permitted under pre-cast concrete members being lifted or tilted into position except employees required for the erection of those members.	
		Lift slab operations are planned and designed by a registered engineer or architect.	
		Hydraulic jacks used in lift slab construction have a safety device that causes the jacks to support the load in any position if the jack malfunctions	
		No one is permitted under the slab during jacking operations.	
		A limited access zone is established whenever a masonry wall is being constructed.	
		Fall protection is provided to masonry workers exposed to falls of 6 feet or more.	

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

STEEL ERECTION 29 CFR 1926 Subpart R. EM 385-1-1, Section 27

YES	NO		COMMENT
		Impact wrenches have a locking device for retaining the socket. Containers shall be provided for storing or carrying rivets, bolts, and drift pins, and secured against accidental displacement when aloft.	
		Structural and reinforcing steel for walls, piers, columns, and similar vertical structures shall be guyed and supported to prevent collapse	
		No loading is placed upon steel joists until all bridging is completely and permanently installed.	
		Workers are provided fall protection whenever they are exposed to falls of 1.8 m (6 ft) or more (EM 385-1-1).	
		Temporary flooring in skeleton steel erection conforms with Section 27.F of USACE 385-1-1	

ROOFING 29 CFR 1926 Subpart M. EM 385-1-1, Sections 21, 22, 24, 27

Yes	No		Comments
		In the construction, maintenance, repair, and demolition, of roofs, fall protection systems is provided that will prevent personnel from slipping and falling from the roof and prevent personnel on lower levels from being struck by falling objects	
		On all roofs greater than 4.8 m (16 ft) in height, a hoisting device, stairways, or progressive platforms are furnished for supplying materials and equipment.	
		Roofing materials and accessories that could be moved by the wind, including metal roofing panels, that are on the roof and unattached are secured when wind speeds are greater than, or are anticipated to exceed, 10 mph.	
		Level, guarded platforms are provided at the landing area on the roof.	
		When their use is permitted, warning line systems comply with USACE Section 27.07 of EM 385-1-1.	
		Workers involved in roof-edge materials handling or working in a storage area located on a roof with a slope \geq to four vertical to twelve horizontal and with <u>edges 6 ft or more above</u> lower levels are protected by the use of a guardrail, safety net, or personal fall arrest system along all unprotected roof sides and edges of the area.	

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

ENVIRONMENTAL COMPLIANCE

Yes	No		Comments
		Environmental Compliance and Waste Management Plan on file.	
		Waste Determination Made.	
		Manifest and/or Shipping Papers prepared and filed.	
		Manifest Exception Reports Prepared, as necessary. Procedures to track manifests in place.	
		State Annual and EPA Biennial Reporting Information Available.	
		RCRA Personnel Training Records on file.	
		CAA Permits on file.	
		CWA Permits on file.	
		RCRA Permits on file.	
		State and/or Local Permits on file.	
		RCRA Inspections conducted and Documentation on file.	
		Transporter and TSD compliance information on file.	
		Waste Accumulation Areas Managed Properly.	
		Wetlands Areas Identified and Protected.	
		Endangered, Threatened or Special Concern Species or Areas Identified and Protective Methods Determined.	
		Runon and Runoff Concerns Identified and Managed.	
		Adjacent Land Areas Protected as Necessary.	
		Non-Hazardous Solid Wastes Managed Properly.	

MISCELLANEOUS REGULATORY and POLICY COMPLIANCE

Yes	No		Comments
		Personnel Training Records for DOT Materials Handling on file.	
		Noise Control Issues Addressed and Managed.	
		Site Security Issues Identified and Managed.	
		Known Historical, Archeological and Cultural Resources Identified and Managed.	
		WESTON EHS Analysis Checklist In Use.	
		Safety Observation and Recognition Program in place.	
		Weekly EHS Report Card System in place.	
		Federal, State and Local Required Postings in place.	
		Site specific Lockout/Tagout Program is in place.	
		Site-specific Confined Space Program is in place.	
		Site Safety Officer filing system is in place and up to date.	

ATTACHMENT K
ENVIRONMENTAL PROTECTION AND SUSTAINABILITY PROGRAM IMPACT
CHECKLIST

ENVIRONMENTAL PROTECTION AND SUSTAINABILITY PROGRAM IMPACT CHECKLIST

PRE-PROPOSAL and EHS COMPLIANCE PLANNING

1. BACKGROUND

- a. Client name, address, phone number, and Point of Contact:
- b. Name/Identifier of proposal, if applicable:
- c. Prepared by:

2. DESCRIPTION

- a. Description, justification for, and location of Scope of Work in the proposal (i.e. training, activity, construction, regulation, license; include site location map):
- b. Environmental setting and present land use of the proposed site:

3. KNOWN OR POTENTIAL EHS IMPACTS:

Note that this checklist cannot completely anticipate all regulatory requirements, and that use of this checklist outlines only certain Federal criteria of specific interest (it is by no means a complete listing). State and local requirements must be evaluated also.

- The **Project Manager and Project Team** are responsible for evaluating project-specific environmental, health and safety needs that may be beyond those outlined in this checklist.
- Assistance is available through the Division Environmental, Health, and Safety (EHS) Managers and Corporate EHS Department. Early engagement of EHS support is a key to success.
- “**Yes**” responses will require a plan to address a specific issue. “**No**” responses must be based upon specific knowledge. “**Unknown**” responses require appropriate follow-up for confirmation.

3.1 Clean Air Act (CAA)

The basic purpose of the CAA is to control air pollution by instituting point source controls (fixed and/or mobile) and establishing maximum pollutant levels for the ambient air. Permits to construct and/or operate are required for sources that meet regulatory requirements. These sources include, but may not be limited to: major stationary sources, hazardous air pollution sources, and sources subject to new source performance standards.

Yes	No	Unknown	Criteria for Evaluation
General and Miscellaneous			
			Will the project release contaminants to the air from a new or existing source of air contaminants?
			Does the project have the potential for deterioration of air quality?

Yes	No	Unknown	Criteria for Evaluation
			Will there be the introduction of smoke, suspended particles, or noxious gases/vapors (e.g., open burning, open detonation, etc.)?
			Will there be real or potential for particulate/dust migration beyond facility/site boundaries?
			Will WESTON own or operate a source of air emissions (e.g., air stripper, incinerator, thermal desorption system, soil vapor extraction system, fuel tanks or dispensers, electric generators, turbines) or disturb land?
			Will WESTON own or operate an air pollution control device (e.g., scrubber, vapor-phase activated carbon system)?
			Is fugitive emissions and/or perimeter air monitoring specified in the scope of work?
			Has client specified air monitoring methods or real-time monitoring?
Prevention of Significant Deterioration (PSD) Permits (40 CFR 52)			
			Is site within an attainment area? (See 40 CFR 81.301-356).
			Will the project involve construction or operation of a new major source with the potential to emit more than 100 tons/year for those specific listed emissions sources or 250 tons/year for all other emission sources types or a major modification of an existing major source with pollutant emission increases exceeding Prevention of Significant Deterioration (PSD) rates? (see 40 CFR 52.21(b) and/or CAA Section 169).
Non-Attainment Permits (40 CFR 52)			
			Is site within a non-attainment area? (See 40 CFR 81.301-356). If known, indicate which criteria pollutant(s) are not met.
New Source Performance Standards (40 CFR 60)			
			Will the project involve the release of contaminants to the air from a new or modified non-exempt source?
NESHAPS Standards for Air Toxics (40 CFR 61, 63) See also TSCA and OSHA			
			Will the project involve the demolition or renovation of any structure containing asbestos?
			Will the project involve a stationary source or group of stationary sources with the potential to emit 10 or more tons/year of a single HAP, or 25 tpy or more of multiple HAPs?
Accidental Release and Risk Management Planning (40 CFR 68)			
			Will the project involve storage and/or use of any chemical listed under 40 CFR 68.115 at or greater than its Threshold Planning Quantity (TPQ)?
Operating Permits (40 CFR 70, 71)			
			Will the project involve obtaining any permit as required under the CAA?
Reduction in Use of Ozone Depleting Substances (40 CFR 82)			
			Will site tasks involve repair, maintenance or decommissioning of objects containing ozone depleting substances (e.g., air conditioning/heat pump/refrigeration systems)?

State-Specific Requirements

As with many environmental regulations, States may have specific and/or additional regulations and laws associated with air and air quality. Remember to evaluate State and/or Local requirements.

3.2 Clean Water Act

The stated objective of the Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's water by regulating discharges of pollutants into water bodies. Major requirements to plan for include; point source discharges, stormwater discharges, pretreatment prior to sewer system discharge, spill prevention and response, and wetland modification and/or dredge and fill activities.

Yes	No	Unknown	Criteria for Evaluation
General and Miscellaneous			
			Will the project location involve fresh water, marine environment, ground water impact or other?
			Will the project involve impact to water movement (e.g., construction of dam)?
			Will the project involve any change in the quantity and/or quality of ground water?
			Is there any potential for spills of hazardous materials/substances/wastes that could subsequently impact water quality (surface or ground)?
			Will the project involve any impact to wetlands or floodplains?
			Is the project in a well head protection area?
			Will there be any injection of waste materials into the ground?
			Will unimproved roads or new haul roads be required?
			Will the project involve the disruption, displacement or compaction of soil?
			Will the project involve a change in topography at the site?
			Will the project create an increase in wind or water erosion of soils (either on or off-site)?
NPDES Point Source Discharge Permit (40 CFR 122)			
			Will the project involve a point source discharge into surface water?
Stormwater Discharge Permit (40 CFR 122.26)			
			Will the project involve an industrial facility with potential for stormwater discharges to surface water or to a storm sewer system?
			Will the project involve the disturbance of one or more acres of land?
Pretreatment Requirements (40 CFR 403)			
			Will there be a discharge (e.g., process water, groundwater, cooling water) to a sewer authority or public sewer system? (Do not include proper connections from domestic-type sources such as toilets or kitchens).
Discharge of Oil and SPCC Plans (40 CFR 110, 112)			
			Will oil or petroleum products be stored at the site/operation?
			Will the storage capacity of oil or petroleum products exceed 1320 gallons in above ground storage (include only containers equal to or larger than 55 gallons), or 42000 gallons underground?
Wetlands Modification and/or Dredge and Fill Requirements (40 CFR 230-233)			

Yes	No	Unknown	Criteria for Evaluation
			Will the project involve excavation in or the discharge or dredge or fill material into water or wetlands?
			Will the project involve site clearing, or dredging or filling on/near water or wetlands?

State Requirements

As with many environmental regulations, States have specific regulations and laws associated with water protection and quality. Remember to evaluate State and/or Local requirements.

3.3 Safe Drinking Water Act (SDWA)

The SDWA regulates the quality of drinking water. Requirements typically relate to providing public drinking water, waste disposal in underground injection wells and establishing criteria for CERCLA remediation.

Yes	No	Unknown	Criteria for Evaluation
Public Water Supplies and Drinking Water Standards (40 CFR 141-143)			
			Will WESTON be providing a drinking water supply to the public?
			Will the project involve operating a public water supply system that has 15 or more services or serves more than 25 people per day for more than 60 days per year?
Sole-Source Aquifer Protection (40 CFR 149)			
			Will the project involve the discharge of contaminants onto or into areas classified as a sole-source aquifer?
Underground Well Injection (40 CFR 144-148)			
			Will the project involve the placing of fluids into a bored, drilled, driven or dug well?

State Requirements

In addition to compliance (and/or more restrictive) with above Federal criteria, States are responsible for implementing and enforcing well-head protection standards.

3.4 Resource Conservation and Recovery Act (RCRA)

RCRA provides the classic “cradle-to-grave” concept for waste materials, i.e., management of the waste material from generation to final disposal. RCRA requirements apply to those who generate, transport, store and dispose of wastes. Permits and identification numbers may be required for all categories with limited exceptions.

Yes	No	Unknown	Criteria for Evaluation
Non-Hazardous Solid Wastes (40 CFR 257, 258)			
			Will WESTON or the site generate any non-hazardous solid wastes?
Universal Wastes (40 CFR 273)			
			Will WESTON, or the site generate any universal wastes?
Hazardous Wastes Generation and Management (40 CFR 260-262)			

Yes	No	Unknown	Criteria for Evaluation
			Will WESTON generate any hazardous wastes?
			Will WESTON be responsible for managing hazardous wastes generated by the client?
			Will site activities result in quantities that result in Conditionally Exempt Small Quantity Generator (CESQG), Small Quantity Generator (SQG), or Large Quantity Generator (LQG).
			Has on-site accumulation of waste stream (areas, containers or other device) been evaluated?
Hazardous Waste Treatment and Disposal Permit (40 CFR 264-270)			
			Will on-site treatment of waste(s) be conducted?
			If off-site disposal has TSDF been evaluated and accepted?
			Will the project involve clean-up of hazardous waste or hazardous waste constituents from a RCRA-regulated facility?
Hazardous Waste Transportation (40 CFR 263)			
			Will WESTON be responsible for preparing hazardous wastes for transportation?
			If transporting wastes, has transporter been evaluated and accepted?
			Will WESTON sign manifest? If yes, as Generator or as "Agent" for client?
Underground Storage Tanks (USTs) (40 CFR 280)			
			Will WESTON activities involve the installation, use, maintenance, spill or release clean-up, or decommissioning of a UST storing petroleum or CERCLA-listed hazardous substance?
Used Oil (40 CFR 279)			
			Will site activities involve the generation, storage or transportation of used/waste oil?
Land Disposal Restrictions (40 CFR 268)			
			Will the project involve the generation of wastes meeting Land Disposal Restriction (LDR) criteria?

State Requirements

Most States have primacy for both hazardous and non-hazardous solid waste; ensure knowledge of specific state requirements for such waste streams.

3.5 Comprehensive Environmental Response Compensation and Liability Act (CERCLA)

CERCLA provides a mechanism to clean up uncontrolled or abandoned contaminated sites and hold potentially responsible parties accountable for clean-up costs.

Yes	No	Unknown	Criteria for Evaluation
Release Reporting (40 CFR 300, 302)			
			Are any of the chemicals stored or used on site listed as a hazardous substance (40 CFR 302.4)?

Yes	No	Unknown	Criteria for Evaluation
			Is there a potential for an unpermitted release of a hazardous substance to the environment in excess of its 24-hour Reportable Quantity (RQ)?
Remediation Efforts (40 CFR 300)			
			Are site remediation efforts under control of Federal Government?
			Are site remediation efforts under control of a State or Local Government?
			Are site remediation efforts under Private control?

State Requirements

Many states have enacted Superfund-type programs. Although many are similar to the Federal program, others may have significant differences to include broader ranges of hazardous substances.

3.6 Emergency Planning and Community Right to Know (EPCRA)

EPCRA established a process for developing state and local emergency planning and information programs on hazardous chemicals located at and/or emitted from facilities. Planning requirements apply to any facility that produces, uses or stores threshold quantities or more of any substance on the EPA list of extremely hazardous substances. There are also requirements for facilities that are required to maintain Material Safety Data Sheets (MSDSs) to notify the local fire department of those materials.

Yes	No	Unknown	Criteria for Evaluation
General			
			Will WESTON or WESTON subcontractor have chemicals on site?
Emergency Planning Notifications (40 CFR 355)			
			Do any of the chemicals used or stored on site meet the definition of a hazardous substance and meet or exceed the threshold planning quantity (TPQ) for that chemical or 500 pounds, whichever is lower? (See 40 CFR Part 355 Appendix A and B). <i>If inventory meets criteria (material and quantity) then reports to LEPC, local Fire Department, and SERC are required. (See 40 CFR 370.21).</i>
Emergency Release Notifications (40 CFR 370)			
			Is there the potential for a release of listed substances (see 40 CFR 355, Appendices A and B and 40 CFR 302) that could result in exposure to persons off-site?
Community Right to Know/Hazardous Chemical Inventory Reporting (40 CFR 370)			
			At any point in time is any chemical in a quantity at or more than 10,000 pounds that requires an MSDS?

State Requirements

There are specific reporting and documentation requirements under EPCRA for state and local entities.

3.7 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

The purpose of FIFRA is to protect public health and the environment from the misuse of pesticides by regulating the labeling and registration of pesticides. In addition to data necessary for the registration of pesticides sold there are requirements for the certification of applicators of those pesticides listed as restricted use.

Yes	No	Unknown	Criteria for Evaluation
Labeling and Packaging Requirements (40 CFR 156, 157)			
			Does the project involve the use or application of pesticides?
Certification of Applicators (40 CFR 171)			
			Is the use of a licensed pesticide applicator required (use of restricted use pesticides)?

3.8 Toxic Substances Control Act (TSCA) see also OSHA requirements

Much of TSCA deals with the manufacture, use and distribution of chemicals in commerce with limited impact to WESTON. There are, however, management requirements (to include remediation and disposal efforts) for specific chemicals (most importantly lead-based paint, PCBs, and asbestos).

Note: A “Yes” will require an appropriate technical approach to address the toxic material and must be included within the project-specific HASP. A “No” will require appropriate documentation from the Client or their designee describing how this determination was reached. An “Unknown” will require follow-up and receipt of documentation prior to proceeding.

WESTON may conduct its own survey and analysis to resolve “No” and “Unknown” responses if necessary.

Yes	No	Unknown	Criteria for Evaluation
Lead-Based Paint (40 CFR 745)			
			Has the site been evaluated for the presence of lead or lead-containing materials?
			Will the project involve the removal of lead-contaminated materials?
Polychlorinated Biphenyls (PCBs) (40 CFR 761)			
			Has the site been evaluated for the presence of PCBs or PCB-contamination?
			Will the project involve the removal or handling of PCBs?
Asbestos (40 CFR 762)			
			Does the site or structures contain asbestos containing material (ACM)?
			Will the project involve the disruption or removal of ACM?

3.9 Natural Resources and the Endangered Species Act

The Endangered Species Act (ESA) was passed to designate and protect fish, wildlife and plant species that are endangered or threatened as well as designate critical habitat for those species. Compliance with the ESA is required within the context of this checklist for not only necessary permits (e.g., Stormwater), but, as a means of understanding the potential environmental impact of our work efforts.

Yes	No	Unknown	Criteria for Evaluation
General			
			Is the project site in an area identified as habitat for endangered, threatened or special interest species?
			Will the project result in a change in the diversity or numbers of any species of plants or animals?
			Will the project result in the reduction of numbers or habitat damage to any unique, rare, threatened or endangered species of plants or animals?

Yes	No	Unknown	Criteria for Evaluation
			Will the project result in the introduction of new species of plant or animal (including microbes, etc.)?
			Will the project result in any barrier(s) to the migration or movement of animals?
			Will the project result in any significant alteration, deterioration, or destruction of habitat?
			Will the project result in the alteration, destruction, or significant impact to any environmentally sensitive areas (e.g., wetlands, floodplains, critical habitat, prime farm land, coastal zones, etc.)?

Note that a location-specific understanding of the ESA is necessary for completion of applications relating to air quality permitting, stormwater permitting and potentially others.

3.10 National Environmental Policy Act

The purpose of the National Environmental Policy Act (NEPA) is to encourage harmony between man and the environment, promote efforts to prevent or eliminate damage and stimulate the health and welfare of man, and to enrich the understanding of the ecological systems and natural resources that are important to the Nation. In context, NEPA requires federal agencies to prepare an environmental impact statement covering proposed actions that could significantly affect the quality of the human environment.

Yes	No	Unknown	Criteria for Evaluation
General			
			Is the project a major Federal action, or project, or a project requiring a federal permit, receiving federal funds, or located on federal land? (NEPA)

3.11 Noise (see also OSHA requirements)

The Noise Control Act promotes the policy that the environment is to be free of noise that jeopardizes health or welfare. While there are limited Federal/EPA regulations, there are State and Local regulations/ordinances that are applicable to work tasks.

Yes	No	Unknown	Criteria for Evaluation
General			
			Will the project cause an increase in noise levels?
			Is the project site near sensitive receptor populations (e.g., residences, hospitals, schools, etc.)?
			Will site activities extend beyond typical daylight hours?
			Are there local noise ordinances in effect?
			Does the contract (or specifications) identify noise monitoring or other criteria?

3.12 Occupational Safety and Health (specifically 29 CFR 1910 and 1926)

The overall goal of the Occupational Safety and Health Act (OSH Act) is to assure that employees are not adversely affected to hazards that they may be exposed to in the course of employment. All work activities conducted by WESTON must comply with applicable components of the General Industry

Standards, the Construction Standards, or the applicable requirements of Client-specific criteria (e.g., the Corps of Engineers).

Yes	No	Unknown	Criteria for Evaluation
General			
			Will project activities be conducted under OSHA Construction Standards?
			Will project activities be conducted under OSHA General Industry Standards?
			Will project activities be conducted under the requirements of EM 385-1-1 (USACE)?
			Does the client have any specific occupational/safety requirements for the site work?
			Will project activities be conducted under other standards?

Based upon site activities, location and tasks follow all applicable criteria outline in WESTON's Safety and Health requirements guidelines.

3.13 Transportation (specifically 49 CFR Parts 171-179, 383, 390-399)

Transportation in the context of this checklist typically relates to the transportation of hazardous chemicals. The Department of Transportation (DOT) has specific regulatory requirements that must be met if WESTON either conducts or oversees the preparation for transport or actual transportation of hazardous chemicals/materials designated by DOT.

Note: *Security Plans are required for transporting hazardous materials in an amount that must be placarded, hazardous materials in a bulk packaging having a capacity equal to or greater than 3,500 gallons for liquids or gases or more than 468 cubic feet for solids, or a select agent or toxin regulated by the Centers for Disease Control and Prevention under 42 CFR Part 73. Contact your local Dangerous Goods Advisor for assistance.*

Yes	No	Unknown	Criteria for Evaluation
General			
			Will site activities involve the transportation (or storage incidental to transportation) of hazardous materials?
			Will WESTON personnel be transporting hazardous materials (in any amount)?
			Will WESTON personnel be operating vehicles meeting the definition of a commercial vehicle?
			Will WESTON personnel be operating vehicles transporting a hazardous material in a placarded amount?

3.14 Radiation

Various regulations under the auspices of the Nuclear Regulatory Agency (10 CFR) require specific procedures for the handling, training, storage and maintenance of nuclear materials.

Yes	No	Unknown	Criteria for Evaluation
General			
<i>(For the following questions indicate whether these tasks are by WESTON, Subcontractor, Client or Vendor.)</i>			

Yes	No	Unknown	Criteria for Evaluation
			Will Radiation sources be used or present?
			Will the project involve the transportation of radioactive material?
			Will the project involve the storage of radioactive material?
			Will the project involve the disposal of radioactive material?
			Will the project involve the use or storage of a radioactive source (e.g., troxler gauge, XRF)?
			Have users been properly trained and certified?
			Are users operating under a radiation monitoring program?
			Have rad licenses been transferred and/or the client notified of the presence of rad sources?

Based upon site activities, location and tasks follow all applicable criteria outlined in WESTON's EHS Program.

3.15 Historic/Archaeological

There are numerous Federal, State, Local and Tribal requirements outlining procedures to protect historic and cultural properties. These include those that exist as well as those that are discovered during work activities.

Yes	No	Unknown	Criteria for Evaluation
General			
			Is the site or project in an area that is of historic or archeological interest?
			Will the project result in alteration or destruction of an archeological or historical site, structure, object or building that is on or eligible for inclusion in the National Register of Historic Places?
			Will the project involve the excavation, altering, defacing, or removal of archaeological objects or resources or Native Indian graves, cairns, or glyptic records?

Note that a location-specific understanding of historic and archaeological issues is necessary for completion of applications relating to air quality permitting, stormwater permitting and potentially others.

3.16 Miscellaneous

The following items are included based upon information that must be evaluated for certain WESTON work criteria, for certain sites e.g., real-estate transactions, military locations and for specific hazards.

Yes	No	Unknown	Criteria for Evaluation
General			
			Have subcontractors been screened by Procurement and an EHS Manager or Safety Officer?
			Has a Client Services Manager (CSM), Project Manager (PM), or WESTON Officer engaged WESTON's Subcontractors using the Subcontractor Talking points?
			Has a project Kick-off meeting been planned?
			Will a Safety Officer or an EHS Manager be involved in the kick-off meeting?

Yes	No	Unknown	Criteria for Evaluation
			Will the average work day including driving to and from the site exceed 12 hours? If yes, there must be a plan for addressing driving safety and fatigue.
			Will project personnel be driving vehicles they are not familiar with? If yes, there must be a plan for addressing driving safety.
			Will there be work at elevation (greater than 4 foot difference in elevations between working levels, work from ladders, work from scaffolding, use of aerial lifts, floor openings, wall openings)?
			Will there be potential for struck by hazards (moving equipment, thrown or falling objects or material)?
			Will there be potential for being caught in (conveyors, power-take-off, screens, etc.) or between moving machinery?
			Will there be work with or within 10 feet of exposed electrical conductors?
			Are there overhead utilities?
			Are there underground utilities?
			Will the project add additional traffic volume or types (material or equipment haul trucks) that may require community approval or plans?
			Will there be a traffic control plan for off-site and on-site vehicles?
			Is the facility a military facility?
			Has the potential for UXO/MEC encounter been objectively evaluated?
			Will there be slip, trip and fall hazards
			Will there be repetitive and or heavy lifting?
			If demolition work has the demolition plan, engineering survey and required components been addressed?
			Are there OSHA Specific Standards applicable (asbestos, lead, cadmium, arsenic, hexavalent chromium, benzene, vinyl chloride, methylene chloride, butadiene, formaldehyde, dibromochloropropane)?
			Will work be performed over or near water or boats?
			Will boats be used?
			Will Lifting Equipment and rigging be used?
			Is there a communication Plan for letting neighbors know of WESTON activities that may impact them?

3.17 Real Estate and Tenant Issues

WESTON as an owner or operator assumes liability for actions or activities conducted by ourselves or by others (tenants). We must ensure compliance with Federal, State and Local requirements. The following outline major issues, however, as indicated previously for the EHS Checklist, it is not meant to be comprehensive. Remember, if we have tenants occupying portions of facilities that are under our control, we have an obligation to understand and assure compliance. For the following issues compliance may be by WESTON, by various tenants or a combination, ensure that each tenant is evaluated. Note that various components of the previous EHS Checklist sections may be appropriate.

Yes	No	Unknown	Criteria for Evaluation
Air			
			Are boilers or other pressure vessels (e.g., chillers, air receivers) located within our work space or at tenant locations?
			Have they been certified and inspected?
			Do emission sources (e.g., boilers, chillers, bulk oil storage, etc.) have proper registration (federal, state or local)?
			Are tenants responsible for compliance with inspections and permits?
			Is WESTON responsible for inspections and permits?
Occupancy and Other Permits			
			Do Business Permits/Certificate of Occupancy Requirements: State, County, City/Municipality need to be addressed? If yes, is WESTON responsible? _____ and/or are tenants responsible? _____
			Are Fire Code Inspections (e.g., materials storage, electrical, suppression systems) due? Are Corrective Actions due from past inspections? _____ If yes, is WESTON responsible? _____ and/or are tenants responsible? _____
			Are local permits and/or registrations for USTs or ASTs available or needed?
RCRA			
			Is the facility a Hazardous Waste Generator? If yes, what size? _____ Is WESTON responsible? _____ What is the waste stream? _____
			Do tenants generate Hazardous Wastes? If yes, what quantity? _____ What is the waste stream? _____
			Are appropriate permits available for waste generation?
			Is facility and/or are tenants under litigation or regulatory action for non-compliance with RCRA?
			Are USTs or ASTs on site? If yes, what are type, size, contents _____
			Have USTs been upgraded for overflow and spill control protection?
Water and Stormwater			
			Is a stormwater permit and plan necessary for the site?
			Is a NPDES and/or local discharge permit necessary for the site?

Yes	No	Unknown	Criteria for Evaluation
EPCRA			
			Do any of the chemicals used or stored on site meet the definition of a hazardous substance and meet or exceed the threshold planning quantity (TPQ) for that chemical or 500 pounds, whichever is lower? (See 40 CFR Part 355 Appendix A and B). <i>If inventory meets criteria (material and quantity) then reports to LEPC, local Fire Department and SERC required. (See 40 CFR 370.21).</i>
			Is WESTON responsible for compliance?
			Are Tenants responsible for compliance?
SPCC and Oil			
			Will oil or petroleum products be stored at the site/operation?
			Will the storage capacity of oil or petroleum products exceed 1320 gallons in above ground storage (include only containers equal to or larger than 55 gallons), or 42000 gallons underground?
			Is WESTON responsible for compliance?
			Are Tenants responsible for compliance?
Compliance			
			Is the site under enforcement action for regulatory non-compliance?
			Is any Tenant under enforcement action for regulatory non-compliance?

3.18 Explosives

Various regulations under the auspices of the Bureau of Alcohol, Tobacco, Firearms and Explosives (BATFE), 27 CFR Part 55 – Commerce in Explosives and 27 CFR Part 55 the Safe Explosives Act, require specific procedures for the purchase, use, storage, handling and sale of explosives or explosive containing items. Attention to these questions will help to manage our risk when developing projects that may involve explosives or munitions.

Yes	No	Unknown	Criteria for Evaluation
General			
			Will the project involve the handling or use of explosives or munitions that are either new or recovered (e.g. dynamite, military munitions, UXO, detonating cord, TNT, etc.)?
			Will the project involve the storage of explosives?
			Will the project involve the transportation of explosives?
			Have project personnel been cleared by BATFE as either a Possessor or Responsible Party to handle explosives?
			Will the project require a State Licensed Blaster?
			Will WESTON's Explosives Users Permit be required to execute the project? If yes, has the UXO Service Line Manager been notified?

3.19 Sustainability

There are a wide range of options for integrating sustainability into the execution of projects, far beyond what can be incorporated into this checklist. The following are a few broad questions which are designed to stimulate thinking about how sustainable approaches could be utilized throughout project execution. A

checklist of credits used in evaluating projects for LEED (Leadership in Energy and Environmental Design) could be used here in addition to the checklist below. Inclusion of an employee who is LEED AP Certified in the development of the work plan could help add other considerations, such as sustainable sites and efficient materials and resources. See the WESTON Sustainability Portal <http://westonportal/sites/sustainability/default.aspx> for further details.

Yes	No	Unknown	Criteria for Evaluation
General			
			Are there opportunities to reduce travel-related energy and environmental impacts associated with the project through such techniques as carpooling, use of videoconferencing, telecommuting or utilization of local personnel?
			Has consideration been given to the potential for beneficial reuse or recycling of materials that will be excavated, removed or discarded during project execution?
			Are there opportunities to utilize alternative or renewable energy on the project, through applications such as photovoltaics (solar) or wind power for remote sensing and/or trailer power, or alternative fuel (e.g. biodiesel) for fleet vehicles or equipment?
			Have “green” considerations been integrated into the procurement process for materials and or equipment (e.g. recycled content, energy efficiency, recyclability, minimal packaging)?
			Are there opportunities to increase energy or water efficiency in the execution of the project through selection of appropriate equipment or technical approaches?
			Are there opportunities to offset some of the environmental impacts of the project through purchase of carbon credits, renewable energy credits or wetlands banking?
			Could a Community Partnering/Make-a-Difference event be coordinated or integrated with this project?